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## MONETARY EQUILIBRIUM



# MONETARY EQUILIBRIUM

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LONDON

EDINBURGH

GLASGOW

WILLIAM HODGE & COMPANY, LIMITED

1939

*Printed in Great Britain by  
William Hodge & Company, Limited, Glasgow*

## PREFACE

THIS essay bears the mark of the time at which it was written and the background of its author. It belongs among the attempts made during the early years of the great depression to reach a basis for a deeper and more comprehensive monetary theory. For decades Knut Wicksell's monetary theory has been the centre of discussion in Sweden. Rather than pioneer with a wholly new approach, it was quite natural for the present author to project his own ideas within Wicksell's old framework. Indeed, this mode of presentation has been carried so far in the present essay that it constitutes an "immanent criticism" of Wicksell. Although the method of immanent criticism reveals certain disadvantages when compared with a direct attack on the problems of monetary theory, its use is justified here because it makes possible the presentation of Wicksell's theory in modern dress. Another, perhaps equally important, advantage of the method is that it facilitates the examination of certain crucial assumptions which, though the basis of the whole structure of monetary theory, are frequently neglected.

The essay in the main is confined to a study of the concept and implications of "monetary equilibrium." The concept is fundamental to Wicksell's theory and also, despite its various disguises, to all the later variations on the Wicksellian theme. Nevertheless, within this restricted framework I felt free to deal with some related monetary problems which seemed important at the time. When I wrote the original essay, I looked upon it as a preliminary draft of the introduction to a positive treatise on economic dynamics which I hoped to write. Since then other duties have prevented me from fulfilling this intention.

The original Swedish text, "Om Penningteoretisk Jämvikt," published in *Ekonomisk Tidskrift*, 1931, was a condensation of a series of lectures on Wicksell's monetary theory given at the Geneva Post Graduate Institute for International Studies and at Stockholm University.

## PREFACE

A German translation entitled "Der Gleichgewichtsbegriff als Instrument der Geldtheoretischen Analyse" was included in the "Beiträge Zur Geldtheorie," a collection of essays edited by Professor Friedrich A. Hayek (Vienna, 1933). The three introductory chapters were added to the German edition and certain sections containing contributions toward the settlement of purely Swedish controversies were omitted. As now published in English, the essay is a translation of the German text without consequential modifications.

A revision of the essay would have meant writing a new book, for the entire economic scene has changed, and, under the influence of practical experience, reading and reflexion, the author's own views have also changed. During the past seven years the literature on monetary problems has been enriched perhaps more than in any previous period. Inasmuch as a thorough revision taking account of the present situation was out of the question, I have tried to avoid changes other than those intended to make the text clearer and more consistent. A substantial revision of the concluding sections of the fourth and fifth chapters, however, seemed advisable. Thus I have omitted sections of the German edition in which I had attempted to demonstrate that Wicksell's first and second formulas were identical. As I now look at the problem the attempt was misdirected and inadequate. The first cannot be determined independently of the second, and, moreover, it is really nothing but a statement of the causal factors beneath the more abstract second formula.

The English translation was undertaken at the initiative of Messrs. R. B. Bryce and N. Stolper. I want to thank these two friends very cordially for their work on my old essay; and also Mr. John De Witt Norton and Mr. Rollin F. Bennett, who have at a later stage read and checked the entire manuscript.

GUNNAR MYRDAL.

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## CHAPTER I

### INTRODUCTION

#### § 1. THE RÔLE OF SIMPLIFYING APPROXIMATIONS IN POST-WAR MONETARY THEORY

It is really hard to understand how economists have found time and rest enough for clear thinking and careful observation during the eventful years since the beginning of the World War. The changes in the sphere of economic policy, and especially in monetary affairs, have been of so revolutionary a character that they have shaken the foundations of the capitalist order. It has always been a question—and more so to-day<sup>1</sup> than ever before—of arriving at quick and courageous decisions. Practical life, therefore, has demanded of the science, primarily, theoretical structures as simple as possible, which could be easily understood and applied immediately by the hurried financiers and politicians who had an always rather doubtful and uncertain control over the financial and political institutions of the world. These demands of the day have been best met by those economists who could give simple, ready-made, theoretical explanations and rules for action, referring directly to phenomena which lay on the surface of events and therefore seemed important.

The market value of scientific work during this period undoubtedly depended to a large degree on the possibility of formulating the results in slogans. It may be admitted without hesitation that a certain journalistic superficiality during this period had a real value, even from a higher viewpoint, for practical orientation in

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<sup>1</sup> Spring 1932.

## MONETARY EQUILIBRIUM

the quickly changing picture of events. But this was the case only in so far as this superficiality was obtained on the basis of more thorough investigations than were apparent in the simplified theoretical structures which were presented to the practical man as scientific results. These simplified formulations have the character of *deliberate approximations adapted in every case to the special circumstances of the time*. They have no general scientific validity. In order to be valid at all, even in the special case for which they are presented, they must be based on a quite comprehensive analysis of highly complicated character which cannot be presented along with the results without depriving the latter of that simplicity which makes them valuable from a practical standpoint.

A good example of such an approximating formula, which is adapted to a certain situation and is intelligently simplified, in my opinion, is Gustav Cassel's purchasing power parity theory. Everyone who studies Cassel's formulation of this theory carefully will find that Cassel himself described this theory as a very simplified approximation, which was valuable just because it emphasized in sharp contour-lines one single thought, which Cassel believed—as I think, correctly—had to be hammered as emphatically as possible into the heads of the responsible politicians and bankers at that time. If this quality of the purchasing power parity theory had been recognized, if it had been regarded from the very beginning as only a very simplified approximation adapted to a special situation, scientific discussion would have been saved from long-winded controversies over this subject. The task of proving that the purchasing power parity theory is not generally valid, and that it does not fit into the theory of international trade if the international exchange relations have been seriously shaken, is really too simple to tempt an ambitious scientist, especially

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since the restricted validity of the theory has already been admitted by its founder.

### § 2. THE REVIVAL OF TRADITIONAL QUANTITY THEORY

The purchasing power parity theory has been mentioned only as an example of a theory reduced to the simplicity of catchwords which, in disturbed times, can acquire practical importance and also, to repeat, practical value. From the standpoint of the problems of monetary theory, which will be dealt with in the following pages, it is of still greater interest to point out how the traditional quantity theory has experienced an obvious come-back, in both practical and theoretical discussions. Though varying in form, the quantity theory has still primarily the theoretical content which Irving Fisher has stamped upon it by his well-known standard formula.

This is not surprising, considering the demand for simplicity of formulation during this period. Perhaps no other part of the inherited complex of economic theory lends itself so readily to simplification and popularization as the quantity theory, a fact which under the circumstances was much to its advantage. It contains, moreover, enough common sense to be not entirely useless as a practical guide for monetary policy. It refers to economic realities, which lie immediately before every eye. Under closer scrutiny it reveals, nevertheless, enough theoretical obscurities and puzzles to interest theorists and to permit them a sufficient amount of personal distinction in the formulation of details. In a word, it contains to the highest degree all the qualities which make scientific discussion possible though not always fruitful. And, finally, it is indeed difficult to find a foundation which lends itself more readily to the theoretical development of monetary problems.

§ 3. EMPIRICISTS' CRITICISM OF THE QUANTITY THEORY

From this, however, it is not to be inferred that the quantity theory, even if we include the more veiled variants of it, has not had critics during this period. It has been rejected, for example, by many authors with empirical prejudices against the so-called classical theory, or—in so far as they have used it anyway—at least it has not always been formulated explicitly as a necessary premise for their conclusions.

This had been the case earlier in England and, more particularly, in Germany. But it is characteristic that the empirical protest against abstract theoretical analysis has relatively spared this stencilled and, in a bad sense, "theoretical" theory, just as much recently as formerly. In the case of the American institutionalists, this is explained by their special treatment of the rôle of money in economic life. They described money and the profit-motive as an "institution" of private capitalist society. They had not, in other words, the same objections to the fundamental notions of monetary theory which they brought forward against other parts of the traditional theory. And for that they had good reason: As I shall show presently, the superficiality of the quantity theory saved it from the false, metaphysical depths into which the central theory of exchange value had sunk, thanks to the efforts of the marginal utility school.

Still another circumstance prevents empiricists from being too critical of the quantity theory. If they endeavour to avoid theoretical speculation they are handicapped in dealing with a problem like the monetary one, which has obvious practical significance. Here the question at issue always concerns the probable future consequences of alternative courses of action. These cannot be observed. There is always very much that is unique in every situation, and the effects of relevant alternatives of future political action are even more out

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of the reach of direct empirical study. In trying to answer questions of monetary policy, even empiricists have to rely, in part, on purely theoretical speculation. It is difficult, particularly if one attempts, like the empiricists, to avoid the central equilibrium theory, to give this speculation any form other than that of the classical quantity theory.

### § 4. THEORISTS' CRITICISM OF THE QUANTITY THEORY

But it is probably of greater importance that the quantity theory has gradually come to be criticized also by economists who do not object on principle to abstract theory, critics who want to replace the old quantity theory by a better monetary theory. Another type of monetary analysis is arising nowadays which no longer places the main emphasis on the amount of means of payment. To a certain degree this is a new phenomenon, and Wicksell was therefore correct in emphasizing, in his critical analysis of the discussion of the quantity theory,<sup>2</sup> that it had hardly ever been seriously challenged by another and better developed theory.

Even at the end of the eighteenth, and still more by the beginning of the nineteenth century, many economists had successfully shown weak spots and difficulties in the quantity theory, but they had never really succeeded in replacing it by another theoretical hypothesis. The critics have been successful only where they confined themselves to minor improvements of the quantity theory. The general method of analysis in monetary theory has,

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<sup>2</sup> K. Wicksell, *Geldzins und Güterpreise*, Jena, 1898 (quoted as *Geldzins*), p. iii [xxiii] and 39 ff. [43 ff.]; idem, *Vorlesungen über Nationalökonomie auf der Grundlage des Marginalprinzipes*, Jena, 1913-22, 2nd vol., *Geld und Kredit* (hereafter quoted as *Vorlesungen*, using the second edition 1928), p. 160 [141] and other places. English editions of both these works of Wicksell have recently appeared: *Interest and Prices*, London, 1936; *Lectures* [2 vols.], London, 1934-35. Parallel references will be given to these in square brackets.

for this reason, remained largely the same for more than a century. Whoever tried to build up a fundamentally different theory had to give up because of the difficulties.

But during recent decades a different sort of monetary explanation has arisen. It intrudes more and more into the discussions on monetary policy among experts, bankers, journalists and politicians. It is very characteristic of the peculiar relation between economic development and economic theory that this new and more trenchant attitude towards problems of monetary theory has been stimulated by those same events which have given practical importance to the simple, superficial, quantity theory.

#### § 5. THE DISCUSSION ON WICKSELL'S NEW IDEA IN SWEDEN

The authors who to-day represent this new theoretical approach trace it to Knut Wicksell.<sup>3</sup> Everyone acquainted with earlier economic literature knows, however, that the discussion of monetary problems in England and elsewhere 100 years ago, stimulated by experiences similar to those of recent years, produced a group of ideas which Wicksell finally worked up into a coherent monetary theory.<sup>4</sup>

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<sup>3</sup> *Vide* the studies in the note above : further, "Der Bankzins als Regulator der Warenpreise" in the *Jahrbucher für Nationalökonomie und Statistik, III Folge*, vol. 13, 1897, and "The Influence of the Rate of Interest on Prices," *Economic Journal*, 1907. Wicksell also published a series of monetary articles in *Ekonomisk Tidskrift* which, however, are available only in Swedish.

<sup>4</sup> Wicksell never claimed for himself great originality. On the contrary, he took the greatest pains to begin with the older discussion, especially with Ricardo's theory of the connexions between the amount of gold, the interest rate, and the price level (*vide Geldzins*, p. iv [xxiv], and *passim*). David Davidson later emphasized again the connexion of Wicksell's theory and the classical theory of money. For a sketch of the history of the doctrine, see also Fr. A. Hayek, *Preise und Produktion*, Vienna, 1931, Ch. I [*Prices and Production*, London, 2nd edn. 1933].

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Beginning with Wicksell, scientific development falls into several lines. For a long time Swedish economists alone remained representative of the new tradition of monetary theory. Nearly all Swedish economists have been under the influence of Wicksell, and in the *Ekonomisk Tidskrift* a very lively monetary discussion has taken place during recent decades, in which Wicksell himself took an essential part until his death in 1926. Most Swedish economists agree that, aside from Wicksell, his colleague at the University of Uppsala, David Davidson, furnished not only the most comprehensive but also the most significant contributions. On the basis of the work of Wicksell and of this discussion in the *Ekonomisk Tidskrift*, Erik Lindahl, a pupil of Wicksell in Sweden, has recently tried to give a more systematic representation of certain parts of Wicksell's monetary theory in two studies on the aims and methods of monetary policy<sup>5</sup> which, however, like the whole discussion in the *Ekonomisk Tidskrift*, have been published only in Swedish.

### § 6. THE ADOPTION OF WICKSELL'S IDEA BY THE AUSTRIAN SCHOOL

Later, certain theorists of the Austrian school, particularly Mises<sup>6</sup> and Hayek<sup>7</sup> first saw the importance of Wicksell's ingenious ideas. It is not surprising that it was the Austrians who found the connexions with Wicksell: Wicksell himself was a pupil of Böhm-Bawerk and he put his thoughts into forms and constructions based directly on Austrian habits of thought.

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<sup>5</sup> *Penningpolitikens mål*, Lund, 1929, and *Penningpolitikens Medel*, Lund, 1930.

<sup>6</sup> *Theorie des Geldes und der Umlaufsmittel*, München, 1912, 2nd edn. 1924 [*Theory of Money and Credit*, London, 1934] and *Geldwertstabilisierung und Konjunkturpolitik*, Jena, 1928.

<sup>7</sup> *Geldtheorie und Konjunkturtheorie*, Vienna, 1929 [*Monetary Theory and the Trade Cycle*, London, 1933], and *Preise und Produktion*, Vienna, 1931.

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Once the Austrians had broken the ice, Wicksell's ideas began to penetrate many German studies on monetary and business cycle problems. The older German literature is nearly free of such ideas. Wicksell's earlier German publications had remained nearly unknown in Germany. A characteristic example is Helfferich's great work *Das Geld*, a study to which Wicksell himself attached a certain value although he emphasized the absence of any theoretical statement of the monetary problem. With understandable melancholy, Wicksell remarked in his excellent review of the book in the *Ekonomisk Tidskrift* that Helfferich in his 58-page bibliography of monetary literature had overlooked Wicksell's *Geldzins und Guterpreise*, while with typical German thoroughness he had recorded all possible and impossible printed rubbish.

### § 7. THE ANGLO-SAXON DEVELOPMENT

The English school of theorists has only slowly arrived at Wicksell's statement of the problem. Not only Marshall, but also Pigou and Hawtrey do not seem to be really familiar with Wicksell's work. D. H. Robertson's significant little book, *Banking Policy and the Price Level*,<sup>8</sup> contains many of the new ideas, but he, too, obviously lacks a thorough knowledge of the content of the monetary studies of Wicksell and his pupils, and he has therefore been forced unnecessarily to think for himself. J. M. Keynes' new, brilliant, though not always clear, work, *A Treatise on Money*,<sup>9</sup> is completely permeated by Wicksell's influence. Nevertheless Keynes' work, too, suffers somewhat from the attractive Anglo-Saxon kind of unnecessary originality, which has its roots in certain systematic gaps in the

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<sup>8</sup> London, 1926.

<sup>9</sup> London, 1930.

## INTRODUCTION

knowledge of the German language on the part of the majority of English economists.

Again, in America the modern ideas can be traced in popular writings like the letters of Foster and Catchings to the press, and in business jargon, rather than in publications with more scientific pretensions.<sup>1</sup> Here I refer mainly to doctrines—in part quite vulgar—of overproduction and underconsumption, lack of purchasing power, &c. And although these doctrines, in the form in which they are put, could hardly stand the searching criticism of a good graduate of Chicago or Harvard, they have yet a touch of that modern realism which, starting from Wicksell, has begun slowly to find its way into monetary theory and which will replace the old quantity theory.

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<sup>1</sup> The reader is again reminded of the date of original publication of the present essay. The judgment is, of course, correct only as applied to the literature before the crisis.

## CHAPTER II

### WICKSELL'S STATEMENT OF THE PROBLEM OF MONETARY THEORY

#### § 1. MONETARY AND GENERAL EQUILIBRIUM THEORY

As a foundation for my later analysis I shall try first to sketch briefly the general theoretical background of the new beginnings of monetary theory that start with Wicksell.

It is a peculiarity of all systematic treatises on orthodox economic theory that there is no inner connexion and integration of monetary theory with the central theory of prices. Usually the monetary theory is only a rather loose appendix to the theory of price formation. The central economic problems—according to the classical theory, those of production, of barter-exchange and of distribution—are treated, without exception, as problems of exchange value, or in other words as problems of relative prices. Obviously, by regarding the central economic problems in this way one entirely detaches their fundamental treatment from any monetary considerations.

From a historical standpoint this sharp division of the theoretical systems into two separate parts rests, of course, on the fact that theorists always hunted for the "value" of goods, a "value" to be understood in a "deeper" sense than mere exchange value. At least after the *cost of production* theory had been replaced by the *marginal utility* theory of the neo-classical school, money was denied any independent "value" in the "deeper" sense mentioned. The "value" of money was only

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intermediate, and derived from its purchasing power with respect to goods and services.

The "value"—in the "deeper" sense—of the commodities and services had, therefore, to be independent of their accidental price in monetary units. It was, therefore, possible to make scientific investigations into this "value" which abstracted from monetary phenomena. Moreover, it had to be studied in isolation from money and money price. The phrase "money is only a veil" recurs again and again, and this veil had to be lifted so that it would not hide the underlying relations.

Even theorists like Walras and some of his pupils—Cassel, Pareto and Fisher, whose hedonistic-metaphysical background does not show so clearly in their theoretical thinking—took pains to draw the line of division clearly and sharply between the theory of price formation proper on the one side, and monetary theory on the other. Even these theorists have based price theory proper upon the study of relative exchange value, and consequently monetary considerations have been neglected or rather postponed as a complication for later discussion.

### § 2. THE IMPOSSIBILITY OF INTEGRATING THE TWO THEORIES

This, then, from the standpoint of the history of economic thought, is the explanation of the method of separating the central theory of price formation from monetary theory. (If we look at the equilibrium theory of relative prices as an attempt to explain economic reality, the theory is obviously incomplete—a fact which all equilibrium theorists saw. One equation is missing, namely the one determining the *multiplicative factor*, by which the relative prices of equilibrium theory can be translated into absolute money prices. The task of

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monetary theory is, then, to provide this missing equation.)

The traditional monetary theory, which is in this way annexed to the central theory of price formation, is the quantity theory as already noted. This theory—which, by the way, is much older than the equilibrium theory itself—postulates a certain quantitative relation between the *amount of money*—or more generally *means of payment*—on the one side and “*the general price level*” on the other. The quantity theory, however, has furthermore to prove that there is a certain *causal* connexion between the two, such that, *ceteris paribus*, the price level is determined by the amount of means of payment. (For otherwise the quantity theory does not provide the missing link in the theory of prices.) The multiplicative factor (in the quantity theory, the “price level”) has to be given as a function of the amount of means of payment, which in its turn has to be determined in some other way than by relation to the “price level.” The causal connexion has to run *from* the amount of means of payment *to* the price level.

Before going on, I want to draw attention to one more point. A closer integration of this monetary theory with general price theory, which, of course, would presuppose that money could be treated in the same way as other goods and could be built into the system of price formation, is not logically possible as long as monetary theory works with money and the quantity of money as the main term in its explanation. For the two theories are then based on entirely different principles of explanation. Money cannot be treated as one of the goods in the system of price formation, the exchange relations of which are analysed by the concepts of demand and supply. These notions lose their theoretical accuracy if applied to money. For, as has been emphasized, money does not leave the circulation of money and

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commodities as do other goods which are bought and sold for definite productive or consumptive purposes. Money remains within the circulation while goods and services only pass through. This antithesis appears clearly in the marginal utility theory: the "subjective utility" of money is derived only from its purchasing power with respect to other commodities; its "subjective value," in other words, is directly determined by its exchange value, while with all other commodities exactly the opposite statement is valid.<sup>1</sup>

### § 3. OBSTACLES TO A SATISFACTORY CO-ORDINATION

But, if a real integration of the quantity theory with the central price theory is impossible, can there not be at least a simple co-ordination of the two? This is obviously what has been attempted by economic theorists of classical background from the very beginning. Such a co-ordination presents great difficulties as well. These appear as soon as one tries to develop the quantity theory into more than a mere truism. Such a development has, indeed, been forced upon the quantity theory, simply because of the extraordinary and obvious importance of the phenomena with which it deals. Monetary theory is always forced into much closer contact with actual problems than the general equilibrium theory of relative prices, which, on its high level of abstraction, is better protected against such contact.

I cannot spend much time on the controversy over the quantity theory, which persisted for more than a century. The result has been to make the simple and precise formulas continuously more complicated and at the same time more relative. (Everyone knows nowadays

<sup>1</sup> Cf. Wicksell, "Den dunkla punkten i penningteorien," *Ekonomisk Tidskrift*, 1903, p. 487. *Vorlesungen*, p. 28 [p. 26], *Geldzins*, pp. 17, 21, 27 [pp. 18-19, 23, 29-30].

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that, even if we include credit in the amount of means of payment, no simple relation exists between the amount of such means of payment and the "price level," because the velocity of circulation of the means of payment (and, by the way, of the goods, too) cannot be regarded as constant during a dynamic process. Everyone knows, furthermore, that the expression "price level" in the equation of the quantity theory, is something very curious, indeed, since "prices" of "purely pecuniary rights" are included. The quantity theory is defective for many other reasons as well, e.g. the impossibility of using the "total sales" as a principle for weighting a sensible and relevant price index. The expression "price level" in the quantity theory cannot be defined in such a way as to give the multiplicative factor which the theory of relative prices needs in order to be determinate.

It is, however, quite possible to give the notion of the "price level" another meaning which makes it more useful for the analysis of the process of price formation. In particular, English theorists of the Cambridge school have worked on this problem, as is well known. But in a quantity equation in which the price level is so modified, the expression "amount of means of payment" loses concreteness. The attempts in this direction prove only, if one were not already convinced, that the determinateness of the relation between  $P$  and the amount of means of payment disappears, if one understands by the letter  $P$  in the quantity equation a really precise and concrete kind of a price level.

(It is, further, nowadays generally recognized that the quite complicated quantitative relation between the amount of means of payment and the "price level" is by no means such that it can be said that the amount of means of payment determines the price level, rather than the other way around. The bankers who are in closest contact with the "amount of means of payment"

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have always asserted that the causation is the other way, that the amount of means of payment only reflects obediently the needs of economic life for means of exchange, while it can be said that the demand for means of payment itself depends upon the height of the price level and its tendencies to change.)

In saying this, bankers often wished only to rid themselves of the responsibility for the real course of events, and sometimes they have used this assertion as part of a logically false argument. But to a certain extent they were right in denying the "one way" causal connexion from the amount of means of payment to the "price level." For the changes in the price level and in the amount of means of payments are both simultaneously dependent upon factors which lie outside the mechanism of payment proper. And since, as was already explained, the amount of means of payment and its exchange value—equal to the reciprocal value of the price level—cannot, without trouble, be built into the equilibrium theory of relative prices, a satisfactory analysis of these underlying factors has never been reached on the basis of the quantity theory. The quantity theory, therefore, has always remained a superficial and indeterminate monetary theory.

### § 4. CONSEQUENCES IN THE TREATMENT OF CREDIT

All this and much more has been common knowledge for a long time, as conscientious quantity-theorists generally admit. *Faute de mieux*, the quantity formula has nevertheless been used to tackle practical problems, the solution of which could not wait for better theory to be developed. And it was absolutely correct to do so. (It can even be said that the superficial approach through the quantity theory which resulted from this very isolation of monetary problems from the central problems of price formation has been of some advantage

to monetary theory. Monetary theory has at least been saved from the abstruse chaos of objective and subjective, individual and social, marginal and total, utility and value, which finally brought about the decay of the central theory of price formation.)

(But, from the standpoint of this central theory of price formation, the quantity theory did not, as already mentioned, fulfil the task which was asked of it. It did not give the multiplicative factor which this theory needs in order to transform relative prices into absolute money prices. The theory of prices, therefore, remained, by logical necessity, extremely abstract and unreal.)

✓ (The prices explained in general equilibrium theory refer only to a single moment. It therefore seems impossible to incorporate time contracts, expressed in monetary units, e.g. credit contracts, into the central theory of price formation in a satisfactory way. This impossibility of working credit into the theory of price formation is naturally all the more to be regretted since credit forms the bulk of all means of payment—or, at least, determines the velocity of circulation, if only coins and notes are counted as means of payment.)

(The problem of credit, therefore, had to be excluded from the theory of price formation and was left entirely to monetary theory. But even monetary theory (quantity theory) had no place for a satisfactory discussion of credit; for credit is a causal factor not only for the price level but also for price relations, which are partly determined by the profitability of business and, therefore, by the supply and demand price for credit. The problem of credit, therefore, requires a monetary theory which is really integrated with the central economic theory, but this the quantity theory was not. The traditional economic theory has consequently attributed to credit only a subordinate rôle and has given it a theoretically inconsistent treatment.)

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The example of credit has been chosen only as typical of the fatal effects resulting from the separation of monetary theory and the central theory of price formation.

### § 5. CONSEQUENCES FOR THE ANALYSIS OF BUSINESS CYCLES

Now, economic theorists, of course, are not mere logical automaton and they have, therefore, used their central equilibrium theory of relative prices for the discussion of actual problems, although these have to do with absolute and not with relative prices. The difficulties mentioned above have not spoiled the results of their analysis where the distinction between relative and absolute prices was irrelevant. But more often it has turned out badly, particularly where the *time* element and phenomena of the *business cycle* played a part.

I should like to indicate only one example. The equilibrium theory of relative prices contains, as is well known, the theorem that the supply of every commodity is in itself demand for all other commodities. General overproduction, therefore, is impossible, *ex hypothesi*. This theorem, which has been taken over from the oldest classics and which is in itself only one part of the isolation premise we have just dealt with, has often caused economic theorists to overlook difficulties which accompany practical problems. If they really looked into these difficulties and made careful business cycle analyses, usually they could no longer employ their carefully worked out theory of relative prices. The more empirically minded economists, therefore, were always able to state triumphantly that the theorists could do nothing with their theory as soon as they tried to deal with actual problems, and especially with problems of the business cycle.

Others have approached those problems from the

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quantity theory instead. Their results have been exposed, for another reason, to the reproach of being superficial and doctrinaire. The quantity theory overemphasizes the movement of the general price level, which invites criticism inasmuch as every business man knows that no such thing as a homogeneous price level exists. He knows, rather, the significance of the changes of the price relations *within* the price level.

Furthermore, the discussion of the problem of the business cycle from the quantity theory viewpoint usually brings about an underestimation of the significance of changes in production, consumption, and saving, or invites at least a sort of analysis where the changes in those spheres are treated as if they were caused by a primary change in the price level. This, too, is theoretically inadequate because very often these changes obviously precede the changes of prices and the price level, and therefore they can hardly be treated as caused by the latter. The quantity theorists, moreover, seem to be regularly exposed to the temptation of assuming too simple and direct a relationship between credit and credit policy, especially the bank rate, on the one side, and the price level and the movements of the business cycle on the other.

(All in all, because of the lack of a rational co-ordination of the theory of price formation and monetary theory, the theorists have been forced into dangerous superficiality in handling the problem of the business cycle. It is irrelevant whether they start from the general equilibrium theory of price formation, or from monetary theory, or whether, as is even more usual to-day, they put aside economic theory because of these difficulties and take a third standpoint wherein several quite superficial generalizations from observed facts are worked into a sort of "business cycle theory" side by side with price and monetary theory. As all these possi-

bilities prove more and more obviously unsatisfactory, one turns to a fourth approach, which consists in arranging the statistical observations according to a more or less complete aggregate of hypotheses which are theoretically unco-ordinated and which are openly admitted to be unsatisfactory. This fourth and particularly curious manner of putting the problem has been developed recently by W. C. Mitchell,<sup>2</sup> but has much older models. But this method, too, is superficial, although in another sense. It is superficial, as is every eclectic aggregation, since it lacks logical analysis which alone makes possible an integration between theoretical elements otherwise obviously contradictory, or, at least, unconnected.)

§ 6. WICKSELL'S THEORY OF SUPPLY AND DEMAND FOR  
"ALL GOODS"

When Wicksell in the middle of the 'nineties began his monetary studies, the results of which he published in 1898 under the title *Geldzins und Güterpreise*, he probably came across pretty much the same difficulties and considerations that we have attempted briefly to indicate. When he started the study, he was interested primarily in the controversy about bimetalism. But since the general price movement changed its direction just at that time, this practical point of view lost interest and instead Wicksell worked himself deeper and deeper into central theoretical problems.

He at once came into conflict with the traditional quantity theory. Wicksell was very radical in actual political questions, but in scientific questions he was all the more conservative.<sup>3</sup> His whole view of life was in

<sup>2</sup> See especially *Business Cycles, the Problem and Its Setting*, New York, 1927.

<sup>3</sup> Cf. the article of Emil Sommarin, the successor of Wicksell in the chair of political economy at the University of Lund: "Das Lebenswerk von Knut Wicksell," *Zeitschrift für Nationalökonomie*, Vol. II, 2, 1930.

ideal accordance with the utilitarianism of the old English classics. His first economic training he got from J. S. Mill's *Principles*, which followed closely the English tradition. Wicksell, therefore, always paid due respect to the old quantity theory. He looked upon his own theory as a link which was to tie together the quantity theory with the central theory of price formation.<sup>4</sup> In the introductory and the concluding remarks of the fifth chapter I shall examine the extent and the sense in which this is true.

It is not easy to give in few words a really adequate presentation of the fundamental ideas of Wicksell's formulation of the problem. In *Geldzins und Güterpreise* his exposition is continuously interrupted by critical discussions of older monetary theories. His own theory is expounded under very abstract and artificial assumptions, and is not even free from logical mistakes. In his *Lectures* his presentation is more direct and realistic, but very short and not as thorough as in the older work. In the following I shall pass over these deficiencies of Wicksell with respect to his presentation and theoretical exactitude, in order to give a better idea of his main argument. I want to start with some of Wicksell's statements, made only in a casual manner, but which nevertheless seem to me to contain the heart of his theory. In order to get his train of thought more clearly and completely I shall add some corollaries which, however, were first drawn explicitly by Wicksell's pupil, Lindahl, in the works mentioned above.

Wicksell argues in approximately the following way:<sup>5</sup> The general method of analysing price formation of a single commodity is to divide the complex of causes into

<sup>4</sup> *Vorlesungen*, p. v. [The English edition does not contain Wicksell's preface to the second volume of the German edition.]

<sup>5</sup> *Vorlesungen*, pp. 180 ff., 191 ff. [pp. 159 ff., 168 ff.].

two categories: supply and demand. If the price of a commodity rises, we say that it results from the fact that the demand has risen or the supply has fallen, in which case equilibrium is reached only at a higher price. Then we inquire into the causes of the increased demand or decreased supply. If now *all* prices (the price level) rise it must be possible to explain the phenomenon in the same manner; it must be possible to say that the demand for all commodities rises, or the supply of all commodities falls.

Wicksell quite appreciated how heretical this way of looking at the problem was from the standpoint of traditional equilibrium theory. For according to this theory the supply of one commodity was at the same time demand for all other commodities; a disturbed equilibrium between supply and demand for all commodities was not conceivable. Wicksell's heresy was, moreover, the very kernel of those theories of overproduction and underconsumption, the refutation of which the classical economists had considered to be their special duty. Wicksell, therefore, at once made the obscure reservation that the classical economists were "fundamentally" correct. But *prima facie* it was, nevertheless, possible that supply and demand for all commodities could change their mutual relationship. And Wicksell even gave his assertion a particularly strong formulation: "Any monetary theory of value which wants to deserve the name must, therefore, be able to show how and why the monetary or pecuniary demand for commodities can exceed the supply of commodities under given circumstances, or, *vice versa*, can fall short of it." According to Wicksell,<sup>6</sup> this was not sufficiently considered by followers of the quantity theory.

<sup>6</sup> *Vorlesungen*, p. 181 [p. 160].

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### § 7. SAVING, CONSUMPTION DEMAND, INVESTMENT, PRODUCTION OF CONSUMPTION GOODS

Now what is the exact content of the notion "supply and demand for the sum of all commodities"? Wicksell did not always make clear whether he meant consumption goods only, but Lindahl has here, as in some other respects, given Wicksell's thoughts greater consistency. The demand for all consumption goods is obviously that part of the total national income, calculated in money, which is not saved. The supply of all consumption goods is then obviously equal to the total social product minus or plus the changes in stock and minus (new) investments in durable real capital. Wicksell was thus able to suggest the equation which has since been explicitly stated by Lindahl:

*That part of the total national income which is not saved is always equal to the amount of consumption goods sold, multiplied by their price level.<sup>7</sup>*

Under stationary conditions where saving is excluded *ex hypothesi* this equation is only a condensed expression of the system of equations for the formation of prices which says that the total income buys the total social product. In this it is already implied that the statement of the problem represented by this equation makes possible an interlacing of monetary theory and the theory of price formation more intimate than that of the quantity theory.

The expression "price level," too, has now a clearer meaning. If one wants to apply the equation to a certain dynamic situation, one has, of course, to divide income into *saving* and *consumption demand*, and similarly production into *investments* of real capital and *production of consumption goods*. In the combination of those four quantities arises Wicksell's new statement of the problem of monetary theory.

<sup>7</sup> Vide Lindahl, *Penningpolitikens Medel*, p. 12 ff.

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The underlying idea is that one cannot assume an identity between demand and supply of consumption goods except in a state of static equilibrium. This proposition should seem obvious to the unsophisticated mind, since decisions to buy and sell a commodity are made by quite different individuals. Similarly, one cannot assume that capital (investment) demand and capital (saving) supply are identically equal; for they, too, originate with non-identical groups of individuals. To treat supply and demand in these cases as being *identically*, rather than *conditionally* equal, would involve a highly unreal and abstract concept of equilibrium.

### § 8. THE "MONEY RATE" AND THE "NATURAL RATE" OF INTEREST

The next question is: How can we develop a hypothetical principle for the explanation of a changed relationship between the demand and supply of all consumption goods, or, still more precisely, of the changed relationship between saving and consumption, investment and the production of consumption goods?

The considerations of the foregoing sections contain trains of thought which can be found in Wicksell's works in part only implicitly; but the answer to this second question can be found all the more explicitly. Wicksell here uses the interest rate as the central principle of explanation. The interest rate must obviously be of central importance in this problem since it embodies, in a certain way, the *exchange relation between commodities in general at two different points in time*.

The money interest rate as a price is distinguished from all other prices by the fact that it can be expressed only as a price ratio, not merely in abstract theory but also in real life. It is impossible to give it the form of an absolute money price since the objects which are

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bought and sold by means of it have already been expressed in money. On the credit market, money interest is equal to the cost of a unit of capital disposal during a unit period of time.

In central price theory—Wicksell was a pupil of Böhm-Bawerk—the money interest rate thus defined corresponds to the physical marginal productivity of the roundabout process of production (“natural” or “real” interest rate). What happens, Wicksell asks, if this price, the price ratio between future and present goods, is determined on the money and credit market in such a way that the money interest rate is not the same as the “natural” or “real” interest rate in the central theory of price formation?

In studying this question Wicksell reached a solution of the problem of the causal factors which underlie the phenomenon of saving and consumption, investment and the production of consumption goods. In this way, to use a happy expression of Lindahl's, Wicksell shifted the main emphasis in monetary theory from the superficial level of the mechanism of payment in the old quantity theory to the deeper level of the formation of prices proper.

### §9. THE CUMULATIVE PROCESS AND THE SHIFT IN PRODUCTION

In the next chapter I shall discuss the meaning of a correspondence between the “natural” and the money rate of interest, and in what sense such a correspondence really brings about monetary equilibrium. Before doing so, however, I want to describe briefly the theoretical scheme of the *cumulative process* which takes place, according to Wicksell, if such a correspondence does not exist. Again I do not refer only to Wicksell but to Wicksell as completed by the results of the subsequent

discussion in Sweden. I refer particularly to the book by Lindahl, *Penningpolitikens Medel*, which in its summary of the Swedish discussion, had the great merit of presenting the most thorough and clear analysis of Wicksell's cumulative process.

We start with the assumption of complete correspondence between the money and "natural" rates of interest—leaving it open for the moment what that means. The monetary factors are then "neutral" with respect to prices, according to Wicksell. We assume, furthermore, that after this there arises a discrepancy in the interest rates, either because of a decline of the money rate or, what is more probable according to Wicksell, because of a rise in the "natural" rate of interest itself.

The immediate result is increased capital value for the existing real capital. For capital values equal the discounted sums of future gross receipts minus gross operating expenses. A cheapening of credit does not lower the price expectations of the entrepreneurs but rather increases them. However, this assumption is not necessary for the conclusion, which is based on the fact that, *ceteris paribus*, a fall of the money rate of interest means a decrease in the rate of discount which has to be used when the future receipts expected from the real capital are added up to form capital values. When the entrepreneurs begin to anticipate future price rises, as must happen sooner or later if the money rate of interest is not increased, then the process gets wind behind its sails and moves faster and faster.

The greater the remaining life of the capital goods, the more the capital value increases, since they then represent receipts in the more distant future, discounted at the now lower money rate. The increase of capital values is only an expression of the greater profit possibilities of longer, more roundabout processes of production, which follow immediately from the relatively low money rate of

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interest. These special profit opportunities are greater, the longer the roundabout process of production. The entrepreneurs will exploit these profit opportunities by shifting, to some extent, their activity from the production of consumption goods to the production of real capital goods, which is now more profitable. Furthermore, in every kind of production they will employ more capitalistic methods. By this process factors of production are to some extent drawn away from the production of consumption goods and employed in the production of capital goods, in so far as there were no unemployed factors of production at the beginning; in so far as there were such unemployed factors, they would be employed first in the production of capital without the necessity of a decrease in the production of consumption goods.

The shift in production thus brought about is the essential and necessary change keeping the cumulative process going as long as there is the drive of capital values enhanced by a discrepancy between the money rate of interest and the "natural rate."

### § 10. CUMULATIVE EFFECTS OF THE INCREASE OF PRICES AND INCOMES

Such a transfer of factors of production is impossible without an increase in their prices and incomes. But the entrepreneurs are able to pay higher prices because of the higher profit possibilities just mentioned. The total national income, therefore, increases. In so far as factors of production are withdrawn from the production of consumption goods, the output of such goods also decreases in volume. According to the equation above, Section 7, a tendency toward increasing prices of consumption goods is initiated by these two changes—or only by one of them, if the production of consumption goods does not decrease despite the increase in the pro-

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duction of real capital—for it is reasonable to assume that the increase in incomes leads to a rise in consumption-demand.

As soon as the prices of consumption goods have increased, capital values increase *again*, since increasing prices of consumption goods necessarily make the entrepreneurs' price expectations more optimistic. If we now assume that the entrepreneurs continually, from each new moment, expect future prices to equal present prices of consumption goods, then the rate of increase of capital values will be roughly proportional to the rate of increase in the prices of consumption goods. To some extent the original increase of the capital values would be matched by the higher rates of payments to the factors of production employed. But the *new* increase of capital values and profit opportunities due to the increased demand for consumption goods caused by the higher incomes keeps the process going. The entrepreneurs are stimulated by it to start longer processes of production, again with the same effects on the direction and method of production, incomes, relative demand for and supply of consumption goods, prices of those goods, and, finally, capital values once more, and so on.

The process, as Wicksell himself said, is cumulative; it cannot stop as long as the discrepancy between the "natural rate of interest" and the money rate of interest exists. We have here a race of different "price levels": Of prices for real capital, factors of production, and consumption goods. In the theory is implied not only certain causal relations between them but also a *given order of sequence in their movements*. As long as there is a positive difference between the interest rates, capital goods hold their lead, even if single consumption goods, and possibly even more, single factors of production, especially raw materials used in the production of real capital, increase more than proportionately. If

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the capital values did not lead, the "natural rate of interest" would no longer exceed the money rate of interest.

A negative difference has corresponding but opposite effects.

I have tried here to describe only the general scheme of Wicksell's process. A more realistic description would, of course, have to take into account the existence of different kinds of money interest rates in the credit market, and, further, the existence of various credit restrictions and discriminations which come about otherwise than by regulation of the terms of the interest rate. Excess capacity of firms, and unused factors of production (unemployment) in certain stages of the process, the inertia of the wage and price system, &c., have of course to be worked into the scheme. Wicksell began this detailed analysis of the cumulative process and has been followed in it by Lindahl and others within the Swedish school.

## CHAPTER III

### THE CONCEPT OF MONETARY EQUILIBRIUM

#### § 1. WICKSELL'S RESERVATION CONCERNING THE THEORETICAL MODEL

Wicksell's cumulative process, as can be seen from the foregoing, is a *dynamic deviation in one direction or the other from a monetary equilibrium*.

Wicksell gave the reasons why the banking system would sooner or later stop such a process by changing the conditions under which credit could be obtained. In Wicksell's theoretical model the reaction of the banking system takes the form of a change in the money rate of interest relative to the "natural rate of interest." This generally sets up a process of the same kind but in the opposite direction. Using this model, Wicksell was able to sketch a whole business cycle theory. In doing so he could, of course, take into account quite a number of circumstances which could otherwise be worked into a "monetary" business cycle theory only with difficulty: That the upswing is characterized by extensive investments of real capital, and generally by a change of the process of production towards a higher capitalistic intensity; that capital values and the prices of the raw materials for the production of capital goods move earlier than the prices of consumption goods, and so on. By treating the general price level not as a homogeneous quantity but as a composite of different price levels for different kinds of goods, and by giving a more accurate analysis of change in production itself, he avoided the obvious superficiality which is otherwise characteristic

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of simple monetary business cycle theories employing a rising or falling price level as the causal factor.

Wicksell was also conscientious enough to emphasize that he did not intend his monetary theory to give a complete explanation of the business cycle. Rather, Wicksell saw the primary causes of the business cycle in the technical changes that shifted the natural rate of interest. Failure to adapt the money rate of interest, of course, forces the situation into a business cycle.<sup>1</sup>

### § 2. THE METHOD OF IMMANENT CRITICISM

Wicksell's theory obviously stands or falls on the notion of a monetary equilibrium. For the essential content of the theory is that a Wicksellian cumulative process starts in one or the other direction *if* the system is out of equilibrium. Any analysis according to the Wicksellian scheme presupposes knowledge of whether a certain price situation is or is not a position of monetary equilibrium, and, if not, on which side of the equilibrium that situation lies. (The concept of monetary equilibrium has, therefore, central importance for the whole Wicksellian monetary theory) and it will be the task of the present study to clarify the content of this peculiar formulation.

Lindahl has tried in the study often quoted above, *Penningpolitikens Medel*, to rid himself of this notion of monetary equilibrium, and he has even criticized Wicksell on this point. I agree with Lindahl in so far as I, too, find (Wicksell's conception of monetary equilibrium far from clear and partly false,) though for reasons essentially different from Lindahl's. But the task of replacing this notion of a monetary equilibrium by a clearer and theoretically better concept seems to me to be all the more urgent. For to my mind *the concept*

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<sup>1</sup> *Vide* below, Ch. VIII, Section 3.

*of equilibrium is a necessary part of every monetary analysis which follows the Wicksellian scheme.*<sup>2</sup>

My analysis will be of an *immanent* nature in so far as I shall take over in the beginning the fundamental features of Wicksell's monetary theory and shall develop my own arguments under the assumption of the fundamental correctness of his explanation. The Wicksellian formulation, we shall find, will need modification in several directions.

The reasons for choosing this immanent method for the analysis and for presenting my own results as a development of Wicksell's theory instead of arranging my exposition more directly and systematically according to positive theoretical principles, are, first, my belief that particularly in the present state of economic theory we should clearly trace the lines of tradition—positive as well as negative—from the older generations of economists in order to prevent our literature from falling any more than necessary into Babylonian barbarism. I hope, furthermore, that this mode of presentation will prove to have the advantage for the foreign reader that I shall be able to demonstrate Wicksell's thought more clearly than was possible in the brief, and necessarily superficial, survey of the preceding chapter. I consider this to be a profitable task even if my own positive

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<sup>2</sup> I have criticized Lindahl on this point in a Swedish publication "Om penningteorisk jämvikt," *Ekonomisk Tidskrift*, 1931, Nos. 5 and 6. I have there tried to prove not only that his particular arguments against the monetary equilibrium concept are wrong, but also that his own extremely valuable positive contributions to the amendment of Wicksell's theory of the cumulative process contain implicitly the notion of a monetary equilibrium. His attempt to rid himself of this concept has deprived his theoretical analysis of the clarity in some directions it might otherwise have attained. The idea of monetary equilibrium is only driven under the surface of the argument but is nevertheless basic to the whole structure of theory which he has taken over from his teacher. I am ready to accept the possibility, perhaps the desirability, of another structure of monetary theory, free from this cumbersome equilibrium assumption. No one can be more catholic as to methods than the present author. As long as we work on the Wicksellian ground we will, however, not escape the equilibrium concept.

analysis can be less easily understood than otherwise, for it is evident that interest in Wicksell is increasing abroad. Naturally, very few foreign economists are able to read Swedish; and, as Hayek has pointed out, the German translations which have been made of two of Wicksell's works leave much to be desired.

I must on the other hand, unfortunately, renounce all criticism and systematic quotation of foreign literature. This would require too many digressions which I am unable to make because of the limited space at my disposal.<sup>3</sup> I hope to be excused for neglecting the otherwise well-founded demand for literary documentation since I shall try, for the reasons given, to discuss primarily Wicksell's own and, for the whole of modern monetary theory, fundamental theory. I hope, however, to complement the present positive presentation later in another connexion by a criticism, particularly of Keynes and Hayek, whose works are naturally nearest to mine.

## § 3. ANTICIPATIONS IN MONETARY ANALYSIS

The main purpose of the subsequent analysis is to *include anticipations in the monetary system*. A criticism of Keynes and Hayek would have to begin by pointing out the fact that in their theoretical systems there is no place for the uncertainty factor and for anticipations. This is quite obvious in the work of Keynes: In his theoretical part Keynes works with the notion of "profits" which he defines, following J. B. Clark, simply as "windfalls," that is, as completely unexpected income surpluses. "Income" is simply defined as the reward for the means of production ("cost

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<sup>3</sup> The German edition of this essay appeared among those collected by F. A. Hayek in his *Beiträge zur Geldtheorie*. The reader should note that the remarks on the work of Keynes and Hayek in the next section of the present essay were written in the spring of 1932; those on Keynes refer specifically to his *Treatise on Money*.

of production"). In this system of ideas there is obviously no place for risk and anticipations, for capital gains and losses, nor for a useful expression for anticipated increases or decreases in the value of real capital. This is, I believe, the reason why Keynes' concepts of "investment" and "saving" are so obscure and contradictory and why his whole equilibrium system is so unsatisfactory. Here we find also the explanation why his treatment of the "natural rate of interest" and of profitability of the roundabout process of production in general has been left in the background of his theoretical discussion and has merely been replaced by some quite obscure and indistinct hints. It is a good proof of Keynes' intuitive genius that he reaches practical results which in many respects are very much superior to his deficient statements of the central theoretical problems.

Hayek's works, as compared with that of Keynes, have the merit of a more intensive analysis of the roundabout process of production and consequently of the questions of profitability. But Hayek's analysis is stationary or quasi-stationary only, and I cannot see how he would be able to work the risk and uncertainty factor into his system, which is bound by very abstract assumptions which simply cannot be removed. While Keynes' analysis aims at being more general, Hayek directs his thorough analysis—in accordance with the Austrian tradition—towards an abstract case where among other things anticipations are excluded by assumptions which are fundamental to the whole analysis.

It is, therefore, essentially the same principal objection which I have to bring forward against both Keynes and Hayek, though for very different reasons: Their theoretical stating of the problem does not take proper account of the element of change and the anticipations of future changes which are bound up with risk. This objection is quite decisive since—as Keynes remarked

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several times in the applied part of his work though not in the theoretical statement of the problem—the whole monetary problem depends on the factor of anticipation.

### § 4. THE CRITERION OF MONETARY EQUILIBRIUM

In order to clarify the equilibrium concept in Wicksell's monetary theory, I draw attention once more to the fact that the cumulative process is defined as a departure from a position of equilibrium. The essential feature of the process is a shift in production which brings with it an increased production of real capital if the dynamic process has an upward direction, and a decreased production if the process has a downward trend. This shift in production is a *conditio sine qua non*. Lindahl—as opposed to Wicksell who was peculiarly obscure on this point—has proved very nicely<sup>4</sup> that the process would not occur at all if this shift in production did not take place.

The shift in production itself is started and maintained by the positive or negative deviation of the money rate of interest from the natural rate of interest, which is the *indicium* of monetary disequilibrium. This difference allows entrepreneurs to make what I later will denominate “investment gains” during the upward movement by extending their production or by starting new production, that is, by investing. In the downward movement, however, they would realise “investment losses” if they extended their production or started new constructions; this is the reason why they give up investing in this case. In this way the cumulative process comes about in one direction or the other, savings either fall short of or exceed the real investment, and prices are slowly forced either upward or downward. If now

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<sup>4</sup> Vide *Penningpolitikens Medel*, p. 36, note 3.

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the real investments should cease to bring with them these special gains or losses, that is, if the equilibrium condition were to be fulfilled, then this process would stop, but not before.

This, then, is the rôle of the monetary equilibrium criterion in this "ideal" construction of Wicksell: A deviation in either direction brings about a cumulative process which, as Wicksell has shown, does not end until the condition for monetary equilibrium has been restored in some way or other. The process starts and goes on *because* a certain actual situation does not satisfy the equilibrium condition. The equilibrium concept is therefore a necessary part of every analysis which proceeds according to Wicksell's scheme. For the position of the situation concerned *relative to the equilibrium condition* is the decisive datum at which one in an actual situation should arrive by observation, but which in an abstract argument is replaced by a hypothesis.

### § 5. DIFFERENCES BETWEEN MONETARY AND GENERAL EQUILIBRIUM

This monetary equilibrium, which is stated precisely with respect to a certain actual or hypothetical price situation, has by no means the same character as the conditions for a perfect general equilibrium of prices in the static analysis of price formation. Wicksell emphasized this.<sup>5</sup>

The static analysis, which deals with relative prices only, assumes that a deviation from the equilibrium position brings about reactive forces which restore equilibrium again. In the whole analysis of price formation which is developed within the framework of this general scheme, one even regards the equilibrium position as a kind of goal towards which the development tends more

<sup>5</sup> Geldzins, pp. 92, 93 [pp. 100, 101] and other places.

## MONETARY EQUILIBRIUM

or less directly. The equilibrium is said, in this kind of price analysis, to have some sort of a "virtual reality" similar to the surface of rough water, which is fixed although only in the sense of a tendency. In the monetary scheme the relation is exactly reversed: A deviation from the equilibrium position—however small, as Wicksell emphasizes<sup>6</sup>—starts a dynamic development in the course of which equilibrium is definitely abandoned. For this reason the movement is said to be cumulative. The monetary equilibrium has the nature of being *labile* instead of stable as in the general price theory—to continue on the analogies of theoretical physics from which the very notion of equilibrium is also borrowed—and the monetary equilibrium position is, therefore, not a tendency at all but just the contrary. The equilibrium position is a state of the system which must be upheld by incessantly counteracting the influence of all intervening primary changes, if the system shall not start rolling.<sup>7</sup>

The monetary equilibrium condition fixes, furthermore, only *certain specific* relations of prices, which we shall try to work out in some detail in the following analysis, and otherwise it permits any changes. Relative prices can change, and so can—as we will later find—the "price level" and everything else, so long as these monetary equilibrium relations are satisfied. The non-specific relations must, in fact, undergo adjustment changes if, in spite of primary changes the specific relations are to be kept in equilibrium state. It is impossible, as Keynes especially has repeatedly emphasized, to think of stabilizing everything in a changing world. Indeed, one can hardly imagine more than a single point being kept stable; everything else in

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<sup>6</sup> *Geldzins*, pp. 92, 111 [pp. 100, 120-21] and other places.

<sup>7</sup> This is Wicksell's idea. In Chapter VII a number of elements will be indicated which tend to counteract the lability of monetary equilibrium.

## CONCEPT OF MONETARY EQUILIBRIUM

the face of primary changes has to adapt itself to the condition of stabilization thus defined.

In monetary theory this fixed point is now chosen in such a way that a deviation from it brings about a self-accelerating process as analysed in monetary theory. The process develops by a shift in the direction of production.

These two decisive differences between monetary equilibrium and general equilibrium—that the first is not supposed to be a tendency at all and that it does not fix the whole system—must be borne in mind. The concept of monetary equilibrium and the idea of a cumulative process cannot be criticized by showing up the defects of the equilibrium idea in general price formation theory.

### § 6. WICKSELL'S THREE EQUILIBRIUM CONDITIONS

The question is now: How have we to determine this monetary equilibrium position? What are the specific equilibrium relations?

Wicksell, as is well known, defined the equilibrium position by specifying the level of the "money rate of interest" which brings about monetary equilibrium. This equilibrium interest rate Wicksell calls the "normal rate of interest" and determines it with reference to quantities in three different spheres of price formation:

- (1) Productivity of the roundabout process of production;
- (2) Conditions in the capital market;
- (3) Conditions in the commodity market.

The "normal rate of interest" must now, according to Wicksell, (1) equal the marginal technical productivity of real capital (i.e. the "real" or "natural" rate of interest); (2) equate the supply of and the demand

for savings; and, finally, (3) guarantee a stable price level, primarily of consumption goods.<sup>8</sup>

Wicksell assumes that these three criteria for the normal rate of interest are equivalent—i.e. never mutually inconsistent; but he cannot prove it. His formulations are, indeed, too loose and contradictory for this purpose. In the following I will prove that they cannot be identical: Only the first and the second of the equilibrium conditions are even consistent; they are interrelated in such a way that the first is conditioned by the second and otherwise not determined. They both correspond to the main argument which is implicit in the whole theory. But this is so only after they have been corrected in essential points and more precisely formulated. With respect to the commodity market, however, the fulfilment of these two monetary equilibrium relations means something quite different from an unchanged price level.

#### § 7. THE DANGER OF TAKING A "STATIONARY STATE" AS THE STARTING POINT OF ANALYSIS

In the following three chapters I shall discuss critically Wicksell's three equilibrium criteria one after another. As an introduction, however, I should like to draw attention to the peculiar method by which Wicksell, and as far as I know all his pupils, succeeded in leaving these fundamental equilibrium conditions ambiguous and in veiling this ambiguity. The method consists in always choosing a "stationary economic state" as the starting point for the abstract argument.

<sup>8</sup> Wicksell's terminology is not always clear. However, here we shall keep up the fundamental thoughts of his work and call the productivity relation the "natural rate of interest," while the "normal rate of interest" mainly denotes a *loan rate of interest*, namely, that one—and here there is a possibility of an ambiguity—which corresponds to the "natural rate," or that one which brings about equilibrium on the capital market, or that one which guarantees a stable price level.

## CONCEPT OF MONETARY EQUILIBRIUM

In a generally "stationary" economy Wicksell's three monetary equilibrium conditions are naturally easy to define and, besides, are all fulfilled *ex hypothesi*. This, by the way, is also true of formulations of other equilibrium conditions: e.g., in Keynes, the correspondence of the cost of production with the prices of products; furthermore, of a price situation in which the entrepreneurs, if free to choose, would repeat their investments, &c.; and in Hayek, of an unchanged amount of means of payment. Equilibrium is there assumed in all conceivable respects; a thorough analysis of what really is involved in the special monetary equilibrium conditions is apt to seem less necessary if one uses this method of a "stationary initial situation." Wicksell's theory, however, as already noted, is an attempt to analyse a *dynamic* process and it therefore necessarily contains the idea that it is possible to test whether monetary equilibrium is ruling *at any moment of such a process*, which process, of course, is not, and cannot be, stationary.

The method of simply assuming a stationary starting point is therefore unsatisfactory: It evades the theoretical problems without solving them. In a stationary position there is equilibrium even in those relationships *the stability of which would be incompatible with monetary equilibrium when primary changes occur* (for example, a stable price level of finished goods).

It is, however, quite understandable why all the authors who have chosen to work after the Wicksellian schema have used this method. Many difficulties are thereby hidden, though certainly not solved. Our analysis must, on the contrary, face the problem and investigate which *specific* relations have to be fulfilled in order to obtain a situation of monetary equilibrium. That these special monetary equilibrium conditions are fulfilled in a stationary state is self-

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evident; but in this state a number of other conditions are also fulfilled which are incompatible with monetary equilibrium under dynamic assumptions.

The traditional method, which starts from such a stationary state, can indeed arrive at certain results about the general character of the cumulative process. But in order to apply these results to an actual situation, one must be able to determine the position of the different price magnitudes with reference to the specific relations of monetary equilibrium, defined as the state where no tendency to cumulative deviation exists. One must first show which among the equilibrium relationships that are fulfilled in a stationary state are really important from the viewpoint of monetary theory; and one has also to demonstrate how these relationships look under non-stationary conditions.

### § 8. THE INSTRUMENTAL SIGNIFICANCE OF THE CONCEPT OF MONETARY EQUILIBRIUM

The specific monetary equilibrium conditions have a purely instrumental significance in the analysis of real situations and processes. Through the use of these conditions actual situations are characterized in certain respects important for monetary theory. They do not signify a "virtual reality" or tendency, but only state the condition necessary in order that the actual economic development in progress shall not follow a Wicksellian cumulative tendency. If one examines the actual magnitudes of these reference relations in an actual price situation, then one should be able to say of this situation whether monetary equilibrium is ruling in it or not, and if not, on which side of equilibrium it lies and how strong the tendency is for deviation in the one or the other direction. The hypothesis of a monetary equilibrium does not afford a factual appraisal of reality. It

is only an instrument by which observed facts can be analysed in certain respects important from the monetary point of view.

This purely instrumental character of the equilibrium concept in monetary analysis has to be emphasized very strongly, mainly because the idea of a monetary equilibrium with Wicksell, as well as with most of his pupils, has at times, in a rather confusing way, been given a double task. It is a purely instrumental, auxiliary structure in *theoretical* analysis, while at the same time it indicates a definite programme of monetary *policy*. It is, however, not difficult strictly to separate theory and policy in this special complex of problems. In the next few chapters we are concerned exclusively with the purely theoretical monetary problem; in that analysis the notion of an equilibrium is *instrumental*. The problem of monetary policy in which the notion of equilibrium might possibly become a *standard for practice*, will be treated in Chapter VIII.

The equilibrium relations, therefore, are studied at first only as important auxiliary instruments for the analysis of actual or hypothetical monetary and price situations, situations which themselves need by no means fulfil the equilibrium conditions. The construction of such an analytical instrument is the primary task of monetary theory. The characterization of a given situation from the standpoint of monetary theory, thus made possible, is immediately important for monetary policy, the problems of which are always tied up with an actual situation in which one makes plans for a future course of events which at the present moment is only anticipated.

The determination of monetary equilibrium is, however, also of indirect importance, since it formulates the problem of the *course taken by a change from one situation to another*, and it makes possible the analysis of this *dynamic problem proper*. The basis for studying such

a course of events in time has to be the analysis of the initial situation and the situations existing at succeeding points of time. None of these situations can be supposed *a priori* to be equilibrium positions in any sense and therefore not in the monetary sense either. They have, however, to be described with reference to the actual values of the magnitudes of the monetary equilibrium relations—which is, of course, something quite different from their being equilibrium positions themselves. Otherwise Wicksell's apparatus cannot be applied at all.

Our central statement of the problem in the subsequent chapters is therefore the following: From the standpoint of the fundamental idea of Wicksell's monetary theory, what do the properties of a price situation in a non-stationary course of events have to be in order that this situation can be characterized as a position of monetary equilibrium? Much would be gained if this question could be answered more positively and more precisely than heretofore. Particularly, the application of the theory to practical problems would be facilitated—an application which could not conceivably be made by asking whether or not these actual situations deviate from an otherwise stationary state.<sup>9</sup> Wicksell and some of his pupils tried to give more specific definitions to the monetary equilibrium position precisely because they recognized that price formation does not necessarily have to be stationary in order to fulfil the requirement of "neutrality" of money with respect to the price developme~~nt~~.

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<sup>9</sup> The assumption of a "stationary state" not only presupposes a general equilibrium (of certain properties) with given functions of price formations but, moreover, certain forms of these functions. *Vide* Myrdal *Prisbildningsproblemet och föränderligheten*, Uppsala, 1927, p. 5, note 1, and other places; Lindahl, "Prisbildningsproblemet från kapitalteorisk synpunkt," *Ekonomisk Tidskrift*, 1929, p. 41 f.

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### § 9. POINTS AND PERIODS OF TIME

It is, as has already been hinted, essential for the very concept of monetary equilibrium and for the determination of any given situation in reference to a position of monetary equilibrium that the analysis be restricted to a particular *point* of time. Such an analysis can, however, only be thought of as a preparatory step. The dynamic problem proper concerns the development from one point of time to a second and a third and so on. Since *periods* of time are defined as the interval between two points of time, it is obvious that instantaneous analysis at points of time is not only preliminary to a complete solution of the dynamic problems involved, but is also necessary as a basis for the further analysis of these problems. In fact, analysis of a development during periods of time has to get its very terms defined by the instantaneous analysis (*vide* the next Section). This essay is in the main confined to the preliminary analysis of instantaneous situations. To indicate the proper perspective a few general remarks on the analysis of a development proceeding within periods of time might be useful.

Such an analysis must work with a *unit period*, defined as to its length. The general method must be to study the changes of certain interdependent factors. In order not to get lost, very abstract assumptions have to be made simplifying the dynamic process by minimizing the number of factors, exaggerating their homogeneity and fettering them into a rigid, invariant system of mutual reaction. In many respects, period analysis requires a greater degree of simplification and a greater sacrifice of generality than is necessary in instantaneous analysis. The element of greater realism which the period analysis gains by introducing the time-sequences as an object for study must be paid for by certain very unrealistic approximations. In fact, such a study must assume most

of the world unchanged and the rest changing in a very regularized way. However, the movable and the fixed elements of the system studied can be varied and thus some sort of comprehensiveness accomplished. As the number of possibilities is endless, the period analysis will nevertheless only be casuistic. Its value will, therefore, depend very much on the intuitive knowledge on the part of its executor of the actual circumstances to which it is being applied. As to the unit period, it must, of course, be chosen of different length in dealing with different problems, depending on the velocity of change in the factors kept movable and fixed respectively.

One possible method is to think of stationary (equilibrium) periods of time with all changes confined to the timeless points dividing the periods from each other. To make the schema more reasonable, the periods are then thought of as "very short." But in spite of that assumption, this method does not seem workable. The most essential quality of the mutual adjustments to be studied is, that they *take time* and that even the *time order* in which they occur is decisive for the outcome. By concealing the changes within the timeless demarcation points between the periods, the dynamic problems are in fact left unsolved.

There is, furthermore, a fundamental obscurity in the very idea. For in order to be able to shut up the changes within a timeless moment one has to make the old, suspicious assumption of "absolute mobility." But then it is difficult to see why the process should not run to its bitter end at once. The idea is, however, to get the picture of a gradual change with the changes confined to the demarcation points at the beginning and the end of each period. That is not possible without introducing a time element within the very factor of change. The occurrence of change is contradictory to the idea of a timeless point. At a point there are only *tendencies*

## CONCEPT OF MONETARY EQUILIBRIUM

which can be studied and must be studied as a preparatory step to the dynamic analysis proper which refers to the *causal development in time* up to the next point studied. It is the analysis of that development which gives the *raison d'être* for introducing periods of time in economic theory.

### § 10. "EX POST" AND "EX ANTE"

This essay is, as has already been said, mainly confined to the less ambitious study of the tendencies existing at a point of time. Such a study is a necessary preparation for period analysis. It in fact defines the quantities to be used in the further analysis of the dynamic problem.

Some of these quantities refer directly to a point of time. That is true of "capital value" as also of such quantities as demand and supply prices. Other terms—as e.g. "income," "revenue," "return," "expenses," "savings," "investments"—imply, however, a time period *for* which they are reckoned. But in order to be unambiguous they must also refer to a point of time *at* which they are calculated.

It is easy to understand why authors on monetary theory have never come to think of this necessity of stating the point of time at which the flows of returns and costs, &c., are calculated. In stationary analysis there was only the discount factor making a difference and that factor was taken care of by the interest theory. As there was no uncertainty in the system, returns, costs and incomes, &c., could be talked of without it ever being made clear whether they were looked at from the beginning or from the end of the period, or perhaps from an undetermined point somewhere within the period. Most theorists have their early gymnastics in stationary theory and have transferred loose habits of thought to their monetary analysis. In this analysis, however,

whether the terms are defined in the one way or in the other makes considerable difference.

Looking backward on a period which is finished, the terms mean actually realized returns, costs, &c., as those items are registered in the bookkeeping of business. In such an *ex post* calculus there is, as we will later show, by necessity an exact balance between the invested waiting and the value of gross investment. Looking forward there is no such balance except under certain conditions which remain to be ascertained. In the *ex ante* calculus it is a question not of realized results but of the anticipations, calculations and plans driving the dynamic process forward. Had this distinction been kept in mind, much confusion about "saving and investment" would have been avoided. There is in fact no contradiction at all between the statement of an exact bookkeeping balance *ex post* and the obvious inference that in a situation when saving is increasing without a corresponding increase of investment, or perhaps with an adverse movement in investment, there must be a tendency *ex ante* to a disparity. The real problem to be solved in monetary theory is: How does this tendency to disparity in the saving-investment equation develop into an *ex post* balance? As we will show, the route goes over purely dynamic elements of gains and losses which do not enter explicitly in the *ex ante* calculus—they are in fact caused by changes in the anticipations—and which are also a very particular species of returns and costs in the *ex post* calculus. If they were not included there by convention, the books would not balance *ex post* either.

All this will be elaborated later. For the present it is sufficient merely to emphasize that an important distinction exists between prospective and retrospective methods of calculating economic quantities such as incomes, savings, and investments; and that a corre-

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sponding distinction of great theoretical importance must be drawn between two alternative methods of defining these quantities. Quantities defined in terms of measurements made at the end of the period in question are referred to as *ex post*; quantities defined in terms of action planned at the beginning of the period in question are referred to as *ex ante*. Monetary analysis must use both these systems of definition and examine their interrelation, if it is to make any progress. I believe that much, if not most, of the present confusion and unsettled controversies in monetary theory can be attributed to lack of clarity of definition, particularly with respect to the above-mentioned distinction. Probably the chief contribution of this essay, if any, is to have originated the concepts *ex post* and *ex ante*; and to have emphasized the importance of clearly recognizing the period implicit in monetary analysis (see below Ch. IV, Section 6, and Ch. V, Sections 14-16).

### § 11. EQUILIBRIUM CONDITION TO BE STATED IN OBSERVABLE AND MEASURABLE QUANTITIES.

One thing more has to be emphasized before we start with the actual analysis of the conditions of monetary equilibrium. It must be our endeavour to formulate the condition of monetary equilibrium in such a way as to contain observable and measurable magnitudes. Otherwise any practical application of the theory to the analysis of an actual process is excluded or at least made very difficult. The theory ought to yield certain simple and definite formulas which are sufficiently amenable to observation to be useful in a statistical analysis. Whoever, like the present author, looks at abstract economic theory as a *rational complex of questions to be put to the factual material to be observed*—questions which have to be formulated, of course, as clearly as possible, and which

must not be mutually contradictory but logically co-ordinated in a way relevant to the investigation (in this lies the whole task of abstract analysis)—will consider this demand self-evident.<sup>1</sup>

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<sup>1</sup> The attacks of anti-theoretical empiricists can be met only by a *practically applicable theory*. Vide, e.g., the following quotation from Wagemann's *Konjunkturlehre*, Berlin, 1928, p. 166, and compare the remarks on the methodological problem below, Ch. IX.

Wagemann writes about Wicksell's monetary theory: "The empirically established facts are, in this as in other cases, obscured rather than explained by 'theory.' For it is, after all, pure metaphysics to say that interest rates have to correspond to the 'natural rate of interest' on capital. Or can this interest rate be positively determined at all? . . . What concrete equations can be set up for those two factors? Nothing can be explained by the mystic notions of this theory—which is so desperately related to the scholastic humoral-pathology," &c.

Wagemann is objectively quite correct. Wicksell's "natural rate" does not belong to this world (compare the next chapter). But the question is whether one cannot arrive, by a perfection of the Wicksellian train of thought, at statements of problems which can be useful not only in explaining the "empirically established facts" but even in their very observation. "Facts" are by no means easily palpable things, especially if they are of a rather general and complex character. Behind each formulation of "facts" are extensive theoretical hypotheses the existence of which has perhaps been overlooked by Wagemann.

## CHAPTER IV

### THE FIRST CONDITION OF MONETARY EQUILIBRIUM: THE YIELD OF REAL CAPITAL

#### § 1. THE "NATURAL RATE" REPLACED BY EXCHANGE VALUE PRODUCTIVITY

Wicksell's fundamental definition of monetary equilibrium relates, as already mentioned, to the productivity of the roundabout process of production. This first equilibrium condition of Wicksell is fundamental in the sense that it connects monetary with interest theory and thus also with the central theory of price formation.

The "natural" or, as Wicksell sometimes says, the "real" rate of interest is defined as the marginal increment in "physical productivity" of the services of land and labour when they are saved, i.e., not used in providing services for immediate consumption; or as the "real produce of capital in the process of production," or the purely technical "profitability of waiting." The condition for monetary equilibrium is said to be equality of the money rate of interest and the "natural rate of interest" thus defined.

This "natural rate of interest" is thought of as existing in its purest sense in an imaginary state without monetary transactions and therefore without credit.<sup>1</sup> The economic subjects would be forced—to use a particularly happy expression of Irving Fisher—to adapt the "time shapes" of their income streams to their own "time preference schedules," under given market conditions, simply by changes in the method of production, by

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<sup>1</sup> *Geldzins*, p. 93 ff. [p. 102 ff.].

exchange of real capital and commodities, and by loan transactions *in natura*, but not by credit contracts. Wicksell assumes that if there is complete mobility, a uniform time agio will develop throughout the whole system of price formation, which will be implicit in all the particular exchange relations in which anticipations of future relations are involved. This time agio would naturally—unless a stationary system is assumed—be of different magnitude for the various periods of the future which are included in the investment and income forecasts of the economic subjects. The uniformity would hold true only at each separate point of time and for one and the same prospective period from that point.

This interest factor in the exchange relations proper would be “natural” or “real” in the sense that it would reflect the marginal physical productivity of the time factor under given technical functions and other primary factors determining the system. The idea of physical productivity presupposes, however, that there is only a single factor of production, besides waiting, and only a single product and that, moreover, both are of the same physical quality. This idea is therefore of no use in a realistic analysis, since such assumptions, if made at all, exclude the possibilities of a progressive adaptation of the analysis to reality. For the assumptions are conceptually indispensable to the theory of natural or real rate of interest as a marginal physical productivity; they cannot be dropped and replaced by less abstract assumptions.

In the course of his argument Wicksell hints at the possibility of replacing these assumptions of a qualitative homogeneity of the factors of production and the products by the assumption of fixed relative prices of commodities. It must be added that the relative prices of the means of production have to be assumed fixed, as well, and, also a fixed relation of these to commodity prices;

## THE YIELD OF REAL CAPITAL

that is, given and stable price relations in the whole price system have to be assumed. But such an assumption similarly prevents the progressive completion of the theory. For the exchange relations, which would have to be assumed as given and unchanging, themselves depend upon, and also in their turn influence, the time agio. Moreover, it is the great merit of Wicksell that he has led economic theory into methods wherein the determination of prices and price relations is tied up theoretically with the determination of the interest rate. If, therefore, one wants to make the Wicksellian construction of the natural rate of interest really useful for monetary analysis, one has in contradiction to Wicksell to replace the concept of a physical productivity by that of an *exchange value productivity*.

### § 2. CREDIT AND THE " MONEY RATE " INCLUDED IN THE REVISED FORMULATION

As soon as one admits the necessity of such a redefinition, the question arises as to how far the Wicksellian hypothesis of the absence of all monetary and credit transactions is still of importance for the argument, and, further, whether it is not contradictory.

If the exchange values are not given *a priori* but only within the framework of the process of price formation by which the exchange value productivity of waiting is determined too, then this latter can hardly be derived from the total of the exchange relations in which it is contained, except by calculations which assume some sort of uniform abstract unit of account for the exchange values: This procedure would at least theoretically be the simplest one. The exchange value of the accounting unit is then supposed to be irrelevant. It may be tied up with any concrete commodity. Now, the introduction of an abstract accounting unit certainly does not mean

in itself the introduction of credit contracts. But if we assume that the economic subjects replace some of their loan transactions *in natura* by credit contracts which they make in that calculating unit, then, of course, this unit acquires the other properties of a monetary unit, too. This by itself does not necessarily destroy the argument; for, since the exchange value of the calculating unit itself is, in principle, irrelevant, the monetary unit as well as any other could be used in a loan contract. There is, however, a quite essential difference as soon as money time contracts are introduced. The accounting unit receives, through credit contracts, a real importance for the exchange relations; for the process of price formation is then influenced by *changes* in the exchange value of the monetary unit with respect to other commodities. What Wicksell really intends by this hypothesis of the absence of all monetary transactions is obviously the following: He wants to exclude the whole monetary question from the determination of the natural rate of interest.

These considerations lead to the conclusion that the hypothesis of the absence of all monetary transactions is by no means superfluous, because irrelevant, but rather that it is fundamentally incompatible with this argument.<sup>2</sup> We had to replace the concept of physical productivity of waiting by one of exchange value

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<sup>2</sup> Wicksell says: "If now money is actually *lent at this interest rate* by money lenders, then the use of money serves only as *clothing* for a process which *in abstracto* could happen as well without money, and the conditions if economic equilibrium are fulfilled in exactly the same manner." (*Geldzins*, p. 95 ff. [p. 104]. Italics mine.) This assertion is correct only under absolutely stationary conditions where all *relative* prices, including the value of money, are not changing; it is therefore *not* correct under the more realistic assumptions which Wicksell treats immediately afterwards, namely, when various primary changes occur which cannot be foreseen completely and with certainty. For the exchange value of money is then necessarily changed in different ways with respect to *different* commodities, and credit has therefore at each interest rate a different significance for the profitability of different kinds of entrepreneurs' activity and consequently for the exchange relations. Money is no longer only a "clothing" for the process of price formation. Cf. Myrdal, *Prisbildningsproblemet och föränderligheten*, Uppsala, 1927, p. 179 f. and elsewhere.

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productivity because productivity depends on relative prices which cannot be assumed to be stable. But the conditions on which credit is given and taken—here quite abstractly represented by “money rates of interest”—themselves influence these relative prices and through the relative prices the exchange value productivity of real capital. Our conclusion, therefore, must be that credit and the money rate of interest must be included even in the formula by which the natural rate of interest is defined. What could the logical meaning of the difference between monetary and natural rate of interest be, if one really stuck to Wicksell’s procedure, namely, to define the one element of comparison, the natural rate of interest, *only* for a hypothetical case which *excludes* credit contracts and therefore, too, the other element of comparison, the money rate of interest?

After replacing Wicksell’s concept of a purely physical, technical productivity by the concept of exchange value productivity and, further, after reckoning all (relative) exchange values in (absolute) money prices, one thing becomes self-evident: Entrepreneurs’ anticipations of *absolute* future money prices necessarily determine the productivity relation which Wicksell had in mind. This relation is, therefore, no longer dependent only on the anticipations of relative prices or exchange values by the entrepreneurs. The whole problem of money and the value of money which Wicksell wished to avoid in his construction of the natural rate of interest by relating it to physical productivity in a barter economy, is, therefore, included in the analysis of the natural rate of interest after all. It turns out that this cannot be avoided, and for reasons which we can derive from Wicksell’s own monetary theory. It is impossible to think of relative exchange values which, in their development, are independent of the absolute money units in which credit contracts are concluded.

§ 3. THE YIELD OF REAL CAPITAL " EX ANTE " AND  
" EX POST "

Wicksell's concept of the " natural " or " real " rate of interest is, however, so strongly related to a purely physical productivity that I want to introduce a new terminology in what follows in order to avoid false associations. I should like to call the productivity rate which is reckoned in monetary units and expressed in a price relation, which I am using instead of Wicksell's physical productivity, the *yield of real capital*. Now we ask how this yield is to be calculated.

Any calculation of a yield must evidently be related to a *point of time* at which the calculation is made and to a *period of time* for which the yield is reckoned. Two different methods of calculations are possible: The yield can be regarded either *ex post* or *ex ante*. We have already in the last chapter (Ch. III, Section 10) stated the fundamental importance of that distinction and the general content of the concepts. According to the first method of computation the yield is calculated on the revenues and costs realized during the period. According to the second method the yield is calculated by reference to revenues and costs which at the starting point exist only as capitalized anticipations. The first method of computation is " bookkeeping " about what has actually happened during a completed period, the second mode of computation is a business calculation founded on an estimation of what will happen in the future.

Both ways of calculating revenues and costs have a very real meaning in actual business practice. It is the latter method of calculation, based on discounted anticipations, i.e. the *expected profitability* of an undertaking, which, of course, is decisive for entrepreneurs' programs, not the profitability actually experienced during a past period. The latter profitability in principle has importance in the calculations only indirectly as evidence of

## THE YIELD OF REAL CAPITAL

future profitability. As basis for the *ex ante* calculations, the *ex post* recorded experiences may regularly be decisive. But that does not mean that the two concepts should not be kept separate in theory, and that business programs should not be thought of as governed directly only by forecast and plans and only indirectly, via the determination of those anticipations, by the experiences which give the factual premises for the anticipations. We must be careful not to mix up a causal relationship with a logical identity.

Since the function of the antithesis of "natural" and money rate of interest in Wicksell's monetary theory is to explain how the cumulative process comes into existence through the reactions of the behaviour of the entrepreneurs, it is evident that only the anticipated yield is of immediate interest to this theory. Only this can possibly be relevant here. We shall, therefore, have to stress and to analyse the difference between the two methods of calculation, that is, how the "book-keeping" for the past period differs from the *ex ante* calculations for the same period (see below Section 6).

### § 4. THE ANTICIPATED VALUE-CHANGE OF REAL CAPITAL

The yield must obviously be calculated as the ratio between the net return of a particular capital good and its capital value in order that it can be compared with the money rate of interest—which is necessary in Wicksell's theoretical structure. This net return must, for the same reasons, be calculated in such a way that the property value, represented by the capital value, remains constant. Otherwise the net return contains not only an amount corresponding to interest but also an item of amortization.

The condition that the yield has to be calculated from a constant value of property in order to be compatible

with the definition of the rate of interest implies in an *ex ante* calculation the following. A certain change in the value of real capital is regularly anticipated, and this anticipated value-change has to be compensated out of the anticipated total return before we get the net return proper. The net return has to be calculated in such a way that not only the operating costs imputed to the co-operating means of production are deducted from the gross return, but also a sum which corresponds to the decrease in the capital value during the period under consideration—or a sum added corresponding to the increase if such is the anticipation.

Decreases and increases in capital value, or “ depreciation ” and “ appreciation,” include the continuous and anticipated value-change which the real capital regularly undergoes during the lapse of time. We do not include in *this* item of value-change the capital gains and losses which by definition (*vide* below) always represent deviations from the anticipations, and which can therefore have influence only on the estimate of the yield which is made *after their occurrence*. The capital gains and losses represent changes in the anticipations of future returns and costs; in bringing about a higher or lower value of the capital goods they influence indirectly the calculation of the rates of value-change which are valid *afterwards*, and in this way they influence the net returns and the yield calculated *ex ante* at that later point of time for a later period.<sup>3</sup> There will presently be more to say about capital gains and losses, when we come to the *ex post* calculations of the returns from enterprises. They naturally do not appear in the *ex ante* calculations; there are no expectations of capital gains and losses other than those already included in the expectations of returns and costs and, consequently, of capital value at future points of time.

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<sup>3</sup> *Vide* below, Section 6.

## THE YIELD OF REAL CAPITAL

One thing must be added concerning the rate of anticipated value-change. It is not determined by the purely "technical" wear and tear, or the maturing (e.g., of a growing forest), in the subsequent unit period. For it makes no difference to the theoretical argument<sup>4</sup> in which we shall use the concept of the yield, whether the positive or negative value-change arises from such anticipated technical changes or whether it is connected with an anticipated change in the prices. Before the yield of a capital good can be calculated as a ratio comparable with the rate of interest, an item has to be deducted from or added to the gross return which corresponds exactly to the anticipated change in value of the capital good between the present and the next moment of calculation which lies at the end of the nearest unit period. This item is calculated most simply by taking the difference of the capital values at this point and the next point of time.<sup>5</sup> This item would naturally be equal to zero for a capital good of infinite durability in a stationary state.

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<sup>4</sup> *Vide* below, Section 7.

<sup>5</sup> We may, to illustrate the argument, consider the capital value of a capital good as composed of two magnitudes: (1) the hypothetical capital value of the capital good, which would result if exactly the same gross returns and operating costs were to be anticipated for all future time as for the next unit period; and (2) the capital values of the anticipations of future deviations from these returns and costs. In order to hold constant—except for gains and losses which may be caused in future by *changed* anticipations—the total present value, which is the sum of these two capital values, the second capital value has to be amortized and interest paid on it, which is obviously the same as (positive or negative) payments into a sinking fund. The amortization plan of this second capital value has at a given point of time to be determined in such a way that—given anticipations of future interest rates as well—first, this part of the capital value is entirely amortized at the end of the life of the capital good when the sum of the two capital values must be zero, and, second, the sum of the two parts of the capital value at any future moment of time is equal to the anticipated capital value of the capital good at this future moment of time. The payment of interest and amortization of the second part of the capital value represents an item of a depreciation or appreciation, which corresponds to the difference between the capital value of a capital good at the beginning of a period and the anticipated capital value at the end of this period.

## MONETARY EQUILIBRIUM

In practice the computation of this particular magnitude will present the greatest difficulty in the calculation of the net return. For the price expectations of the entrepreneurs exist only in series of rough *probabilities* and the calculations are, moreover, complicated by their volitional attitudes, expressed in terms of valuation, toward the risk of these probability series. Neither these probability scales, nor the risk valuations are given *a priori*.

### § 5. DEFINITION OF THE YIELD

The net return  $e'$  for an individual firm for a unit period, calculated *ex ante*, at a given point of time is: ·

The discounted sum of all anticipations of gross returns in the next unit period,  $b'$ ; *minus*

The discounted sum of all anticipations of gross cost in the form of operating cost of the co-operating means of production in the same period,  $m'$ ; *minus*

The anticipations of the value-change,  $d'$ , calculated for the period by taking into consideration all expectations of income and cost for the *whole* remaining life of the capital goods and also the interest rates which actually rule in the existing situation and are expected to rule in future. The anticipated value-change is here given a positive sign for the ordinary case when the change is a depreciation in value, which means that an appreciation is reckoned as a negative depreciation. It is then defined as the difference between the present value of the real capital and the expected capital value at the end of the unit period. This net change of the value has also to be discounted to the present.<sup>6</sup>

Thus we get the following equation:

$$e' = b' - (m' + d').$$

Since there exists a whole series of probabilities for

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<sup>6</sup> Notes on the symbols used in the text will be found at the end of this Chapter.

## THE YIELD OF REAL CAPITAL

every single element of gross returns and costs, we have to multiply every expectation of incomes or costs by a coefficient before we can discount it. This coefficient gives the assumed degree of probability. The expression for the net return, calculated in this way, must subsequently be multiplied by a second coefficient which expresses as a valuation the attitude toward risk which is held by the entrepreneurs evaluating the probabilities of such future elements of returns and costs. In reality this calculation is naturally done only crudely and summarily. But this should not hinder us from keeping this theoretical pattern of calculation clearly in mind during our analysis.<sup>7</sup>

The yield,  $y'_1$ , is obtained by dividing the net return so calculated by the capital value  $c'_1$  of the capital goods at the time of calculation. Thus

$$y'_1 = \frac{e'}{c'_1}.$$

### § 6. THREE KINDS OF GAINS AND LOSSES

All that has been said relates to a calculation of the yield *ex ante*. For reasons which I have developed above, it is this calculation *ex ante* which corresponds to the main argument in Wicksell's theory. Parenthetically, we may briefly indicate here how an *ex post* calculation of the yield appears and in what respects it differs from the *ex ante* calculation just developed.

The general cause of the existence of a difference between the two is the factor of uncertainty in the calculation of the anticipations. The technical process of production requires *time*: During this time *changes* occur which are *not* anticipated *with absolute certainty*. *Gains* and *losses* result. These gains and losses are in

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<sup>7</sup> For this and the following I refer to my study *Prisbildningsproblemet och föränderligheten*, Uppsala, 1927, in which I have tried to work the anticipation factor into the explanation of price formation.

principle neither elements of income nor of revenue or cost; nor are they capital values either. They are not prices, but *price changes*.

Three kinds of gains and losses should be distinguished.

(1) *Capital gains* and *capital losses* proper. They arise out of changes during the period in the *anticipations* of the entrepreneurs in regard to *future* revenues and costs. The value of real capital rises or falls as an immediate reflex of such changes. For capital value is in theory nothing else but a sum of discounted expectations of future revenues and costs. If these changes of anticipations relate only to the revenues and costs which accrue after the period under consideration, the resulting capital gains and losses do not indicate a difference between the yields *ex post* and *ex ante*. For although the capital value at the moment of the change in the anticipations increases or decreases with the amount of the gain or the loss, the rate of anticipated value-change, and consequently the net return, rises or falls correspondingly. The *ratio* between the net return and capital value is therefore the same *ex post* and *ex ante*. We have assumed here unchanged expectations of the rate of interest.

Even if the anticipations of future revenues and costs remain the same, capital gains and losses of this kind can, however, arise, if the expectations of future interest rates—which are the discount factors—change. Then the rate of value-change alters too, and consequently the capital value, the anticipations of future yields being adapted to the new expectations of the future rate of interest.<sup>8</sup> Finally, the expectations of revenues and costs as well as of the future rate of interest can change simultaneously. This, however, is only a complication of calculation.

(2) *Gains or losses in revenues and costs*. They also

<sup>8</sup> About the relation between the yield, defined as the relation of the net return to the capital value, and the interest rate, *vide* the next Section.

arise out of changes in anticipations, but directly in connexion with the actual realization of the revenues and costs concerned. They arise if the latter prove, at the *time of their maturity*, to have a value different from that at which they were estimated in the previous anticipations. This must regularly be the case in so far as revenues and costs have not been anticipated with full certainty. The gain or loss consists then in the fact that the capital value at the time of the realization of the expected revenue or cost elements did not fall or rise in proportion to the revenue or the cost, as naturally would have been the case if the revenue or cost element had corresponded exactly to the value of the expectations in the *ex ante* calculation.<sup>9</sup>

(3) *Investment gains and investment losses.* These arise if the capital goods just *being constructed* have, at the moment when they are ready for use, a capital value which is larger or smaller than the total cost of construction. The expectations of such investment gains or losses by the entrepreneurs form the profit motive in the course of Wicksell's dynamic process. In this connexion, where we are discussing only the yield of *existing* capital goods, we may disregard them.

The following should be emphasized here. In an *ex post* calculation of the net return the gain and loss factors are unavoidable. For example, it is for logical reasons impossible to avoid gains and losses in revenues and costs simply by analysing "very short periods." Neither could this difficulty be avoided by shortening the length of the period infinitely in an attempt to find a connexion with the formula of compound interest. For gains and losses in *revenues and costs must actually occur at some time*, and since they contain an element of

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<sup>9</sup> These revenue or cost gains or losses would correspond to the "windfalls" of Keynes, if Keynes had defined this notion clearly, which he certainly has not done. The capital gains and losses which we have discussed under (1) seem to have no place in his system.

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surprise, in so far as they have not been anticipated with full certainty, gains and losses arise in the *ex post* calculations regardless of how short the periods into which the process is divided. Corresponding statements are true for the changes in the rate of value-change, which in the case of capital gains and losses are connected with the changes in expectations.

The discussion on the relation between the *ex ante* and *ex post* calculation will be continued in the next Chapter, Sections 14-16. The significance of the three kinds of gains and losses for this relation will then be made clear.

### § 7. THE RATE OF INTEREST EQUALS THE YIELD ON EXISTING REAL CAPITAL

Now let us return to our *ex ante* calculation of the yield, which is logically required in the Wicksellian analysis. We have analysed the net return, and defined the yield as the ratio between the net return so defined and the capital value. But, now, capital value is nothing else than the discounted sum of all future gross incomes minus operating costs. In order to be able to compare the yield with the rate of interest we have furthermore defined the yield in such a way that the value of the principal remains unchanged—for this is the reason why the anticipated value-change has been deducted from or added to the gross return. The capital value is thus equal to the capitalized value of a perpetual net return of the size of the net return of the next unit period—or is equal to the capitalized value of an unchanged net return for any number of time units in the future plus the same capital value at the end of this period. The capital value from this standpoint is in other words only a price reflection of the two magnitudes: Net return and “market rate of interest” (and if we take account of the various kinds of the latter, it refers to just such a complex of

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those kinds of the market rate of interest which are relevant to the firm under consideration. *Vide* below, Sections 10, 11).

This means among other things that there is always and necessarily a conformity between the yield thus defined and the interest rate in the market; for capital value and net return are defined in such a way that they must constantly fulfil this equation. If now in some case the relation of the net income of the next period to the capital value should not correspond to the market rate of interest, the explanation must be one of two faults in the calculation: Either one has not used the market rates of interest which are relevant for the firm under consideration, or one has not calculated the "correct" rate of value-change. The "correct" rate—looking forward—is that which between different periods brings about the required balance of all gross return and cost elements, account being taken not only of technical or bookkeeping anticipations but of all anticipations. This balance is by definition characterized by equality between the market rate of interest and the ratio of net return to capital value. And only if one has calculated "correctly" in this sense can the relation of the "natural" and the "market rate of interest" fulfil the rôle which is attributed to it in Wicksell's monetary theory.

For example, it is not possible to obtain a discrepancy between the "market rate" and the "natural rate of interest"—in this sense of the yield of existing real capital—by simply ignoring that part of the anticipated value-change which is not based on anticipated, purely *technical* changes of the real capital, i.e. by ignoring the part which results from anticipated price changes. For assume that one acted in such a way and calculated a technically determined factor of amortization which we will say, for argument's sake, is smaller than the decrease in value minus the increase in value according

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to our definition: a "yield" would result which would be higher than the "market rate of interest." But if the entrepreneurs anticipated falling prices for their products and if this would just offset or more than offset the difference between such a yield and the market rate of interest, then the said difference would be no stimulus for real investment. And this is precisely the function of the difference in Wicksell's monetary theory.

For this reason it is impossible in this argument to represent the anticipated change in capital value by a more or less conventional rate of amortization to be determined technically or by simplifying patterns of book-keeping, at least so far as the question of profitability is concerned. We shall show later that it is otherwise in another problem central to monetary theory.<sup>1</sup>

### § 8. DEFINITION OF THE YIELD ON PLANNED REAL INVESTMENT

The result of our analysis so far is that, if the yield of real capital is to fit into Wicksell's monetary theory, it has to be defined in such a way that it always by definition equals the market rate of interest. At first sight this result seems to be quite dangerous to his whole train of thought. For Wicksell assumes that a difference between the natural and the money rate of interest can exist. But it is to be noticed that the argument so far relates only to the real capital *already existing*. And the effect of the difference between the natural and the money rate of interest, according to Wicksell, is precisely that it stimulates *investment*, i.e., construction of new capital.<sup>2</sup> Wicksell's theoretical argument requires, there-

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<sup>1</sup> *Vide* Ch. V, Section 13.

<sup>2</sup> Wicksell, *Vorlesungen*, pp. 218-219 [Vol. II, p. 192]: "An interest rate which forms such a direct expression of the real capital interest rate we call normal. In order to define this concept clearly we have to have clear ideas about the proper concept of real capital. We do not mean, of course, the more or less fixed capital which is

fore, that in calculating the yield, which I use in place of Wicksell's natural rate, account be taken not of existing real capital but of plans for new construction.

Henceforth we shall mean by yield the *yield of planned investments*. It would evidently have to be defined as *the ratio between the net return on the projected real investments and the cost of their production*. The net return should be calculated in a way similar to that indicated above (Section 5). The cost of production means the cost as anticipated at the moment in question.

The yield of planned investments as just defined is the rate of profitability which corresponds to that implied in Wicksell's concept of a natural rate of interest. It is an expression for the anticipated "investment gain" (see above Section 6) in relation to the capital sum being invested, i.e., for the rate of capital gain which the entrepreneur could make by buying means of production and transforming them into real capital, which, at its time of completion, is anticipated to have a higher value than the sum of its costs of production, if the investment gain is positive. This anticipated investment gain is obviously equal to the capitalized value of the difference between the expected net return and the interest (market rate) on the capital invested. Of the three kinds of gains and losses previously defined the investment gains and losses are the only ones which, as such, explicitly enter into the *ex ante* calculation of entrepreneurs. The explanation of this difference is that they refer not to existing real capital but to real capital *in statu nascendi*.

Actually it would be very difficult, if not impossible, to calculate the yield on the planned investments of a firm

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already tied up in production, such as buildings, ships, machines, &c., whose return has only an indirect influence on the interest rate in so far as it stimulates or deters the employment of new capital in production. This latter, the capital in its liquid, free and movable form is precisely what matters in this connexion."

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because, like the anticipated cost of production of planned investments, the net return calculated *ex ante* is so difficult to observe. For these returns and costs exist only in the entrepreneurs' program for the future. But this will be disregarded for the moment and we shall discuss it later. All that is claimed here is that the definition is clear *in abstracto* and that it expresses exactly what Wicksell wanted to express by his curious construction of a "natural rate of interest," and that it contains the results at which Wicksell would have arrived if he had followed his own train of thought consistently, and particularly if, in his calculations of yield and of capitalizations, he had taken account of the element of anticipations inherent in changeability.<sup>3</sup>

### § 9. THE REDEFINITION OF WICKSELL'S FIRST CONDITION FOR MONETARY EQUILIBRIUM

The definition of the yield of planned investments given above may be modified somewhat. For practical reasons which will become clearer later on, we prefer to replace the net return on the planned investments by the net return on the existing real capital. We have then also to replace the cost of production of the planned investments by the cost of reproduction of existing real capital. The yield of the planned real investments is then represented by the ratio between the net return,  $e'$ , defined above, and the cost of reproduction of the existing real capital,  $r'_1$ . It will be seen later why this is possible. In defining the yield of the new investments  $y'_2$  as

$$y'_2 = \frac{e'}{r'_1}.$$

I have disregarded, among other things, the fact that technical progress and changes of the relative prices

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<sup>3</sup> Wicksell himself often talks of "chances of gain" and similar things, instead of the "natural rate of interest."

## THE YIELD OF REAL CAPITAL

which are relevant to the cost of production of real capital make new methods of construction profitable for the planned new capital, methods different from those employed in producing the old capital. This unrealistic approximation will be discussed below in Section 12.

We have just defined the yield of planned investments to a firm thus:

$$y'_2 = \frac{e'}{r'_1}.$$

In this particular firm we have furthermore,

$$e' = b' - (m' + d').$$

Adding the incomes of all entrepreneurs in a closed economy we get:

$$\Sigma e = \Sigma b - (\Sigma m + \Sigma d),$$

where  $\Sigma e$  would represent the total national income in money, if all incomes were calculated as capital incomes, which, as every theorist knows, is quite possible in principle.

An important general assumption implicit in the Wicksellian theory is that the natural rate of interest is the same for all firms in the economy. For he continually speaks, with emphasis, of *the* natural rate of interest. Being generous, we might suppose that Wicksell thought of such an equality between the natural rate in different undertakings only in a state of equilibrium, when it is also equal to the money rate of interest,  $i$ , which is then assumed equal over the whole market. If we transform this idea to the yield as we have defined it we get:

$$y'_2 = y''_2 = y'''_2 = y_2$$

when  $y_2 = i$ .

$$\text{Then we have also } y_2 = \frac{B - (M + D)}{R_1},$$

where  $y_2$  represents the yield of real investments, uniform for the whole economy, and where  $B = \Sigma b$ ;  $M = \Sigma m$ ;  $D = \Sigma d$ ;  $R_1 = \Sigma r_1$ .

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But the assumption which leads to this last result cannot be maintained, and it will be our task presently to find out how we can dispose of it. If for the moment we assume it to be fulfilled, we can then formulate Wicksell's equilibrium condition in the following way:

$$i = y_2 = \frac{B - (M + D)}{R_1}.$$

### § 10. DIFFICULTIES IN PRACTICAL APPLICATION: $i$ AND $y_2$ NOT EMPIRICALLY ASCERTAINABLE

From the standpoint of practical applicability, however, we must make several criticisms of the equation  $i = y_2$  in its meaning above. It is, of course, theoretically clearer and more comprehensible than Wicksell's own definition of the equilibrium condition. For his natural rate of interest, which he conceived of as a physical marginal productivity in a barter economy, is a concept which is not at all of this world. But in spite of relatively greater clearness, this formula presents a number of practical difficulties in its application.

For  $i$ , the money rate of interest, becomes quite a complex affair as soon as one wants to apply the formula to the observed material. In reality, there is no such thing as a uniform money rate, but a number of different rates of interest which are differentiated according to the different times of maturity of the loans and other circumstances in the situation. Moreover, discriminations between kinds of credit through variation of credit conditions other than the interest rate, are also elements of normal banking policy. They will grow more and more important in the future, once banking policy is used to a greater extent in the service of monetary policy, and once the bankers see more clearly the importance of the different degrees of elasticity of various demands for credit. Hence in his monetary theory Wicksell's

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“ money rate of interest ” stands as an *abstract representation for all these interest rates and for all the other “ conditions ” and provisos for granting credit.* This ought to be observed in a generous interpretation of Wicksell’s theory. For this reason it is not possible to criticize Wicksell by merely pointing out that there is no single money rate of interest. But this observation means that, if the theory is to be applied to reality, the “ money rate ” cannot easily be found.

The “ natural rate of interest,”  $y_2$ , is equally difficult to apprehend. The difficulty would have been insurmountable had we retained the original definition in which  $y_2$  represented the profitability of new investment opportunities (Section 8). Even redefined as the yield determined by the ratio between the net return and the cost of reproduction of existing real capital,  $y_2$  is very difficult to measure. In particular, this magnitude is not the same for different firms, as already noted. But even if we disregard this and consider only a single firm, this  $y_2$  is very difficult to determine in practice. The net return can only be calculated on the basis of a knowledge of the price expectations of the individual entrepreneur and his evaluations of the risk factor. This difficulty is particularly apparent in determining the anticipated value-change. And we have just shown that in the theoretical argument in which the magnitude  $y_2$  is employed, this amount of value-change cannot be replaced by a conventional rate of depreciation or amortization which is determined either technically or by conventions of bookkeeping (*vide* above Section 7).

### § 11. REFORMULATION OF THE FIRST EQUILIBRIUM CONDITION

The equilibrium condition can, however, be put in another form which means the same but which does not

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encounter the same difficulties if applied in the analysis of an actual situation.

We have according to our definition :

$$i = \frac{e'}{c'_1} = \frac{e''}{c''_1} \&c ;$$

and

$$y'_2 = \frac{e'}{r'_1} ; y''_2 = \frac{e''}{r''_1} ; \&c.$$

Therefore the equation  $i = y_2$  implies the equation  $c_1 = r_1$ . This transformation in itself is not an approximation and does not change the purport. In Wicksell's theoretical argument this equilibrium relation should be stated in terms of the capital value of planned investments and their cost of production. If restated in terms of existing real capital—which means an approximation—the condition for monetary equilibrium could be formulated as the condition of *equality between the capital value and the cost of reproduction of existing real capital*.

This equilibrium formula—expressed as a relation between capital value and cost of production instead of between the rate of interest and the yield—has essential advantages from the standpoint of practical application. First of all, the magnitude “money rate” is not explicitly contained in the equilibrium formula thus reformulated. But the whole complex of very different credit conditions which in Wicksell's theory are represented by the magnitude “money rate” are nevertheless implicitly contained in the capital values. And, moreover, the capital value includes for each firm exactly those credit conditions in exactly those proportions which are important for the capitalization of future revenue and cost expectations in that particular section of economic life. In the capital value the money rate finds an expression which is adequate to the monetary argument.

Similar statements are true about the yield. In the

new formula the net return does not appear explicitly. But the capital values express exactly the very anticipations of future price and production conditions and the very attitudes towards risk which present the real difficulties in a practical application of the concept of net return. They are expressed in a resultant composed in such a way as to be adequate to the argument. The cost of reproduction of real capital must, of course, be determined, for the new formula just as for the old, by observation. But we have avoided the whole complex of the money rate and its determination, and we have avoided the concept of the "net return." Both are adequately represented by the actual capital values.

We have merely to add that in principle we must in this argument consider not only the capital values—of which it is obvious—but also the cost of production of real capital to be *sums of anticipations, discounted to a point of time*. The whole type of approach to the monetary problem represented by Wicksell's first condition of monetary equilibrium requires an *ex ante* calculation. It is to be remembered that capital value—even the value of existing real capital—is an *ex ante* conception by definition and that, further, the discounting is of less practical importance for the computation of the cost of production of real capital, because the period of time to which the anticipations relate is usually shorter. The calculation of cost of real capital *ex ante* is necessitated by the fact that the construction of new capital takes time whilst the instantaneous decision to undertake new construction is decisive for monetary theory; for it is this decision which brings about the relevant shifts in demand.

Certainly this new formula containing capital value and cost of production, especially when these items refer to existing real capital, is easier to handle, but there

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are still a number of difficulties to be overcome before it can be applied in practice. The difficulties would not be so many and so cumbersome were Wicksell right in postulating that the natural rate of interest is equally high in the whole system and that there is only one "market rate of interest." These assumptions, transformed to our new formula, would mean that in equilibrium there would be an equality between  $c_1$  and  $r_1$  in all undertakings and that in disequilibrium the difference between the two magnitudes would be everywhere the same. Neither of these two statements holds true.

If the equilibrium formula is to be useful at all, some sort of *index* representing the difference between  $c_1$  and  $r_1$  for the heterogeneous economic system as a whole must be constructed. In preparing such an index, the terms of costs of reproduction would have to contain data about the prices of labour, of capital disposal (for the expected period of production), of machines, of tools, and of raw materials. Those prices should be multiplied by quantities according to the relative importance of the different price groups in the costs of production of different kinds of real capital. The index of the differences between  $c_1$  and  $r_1$  for the whole economic system, therefore, must be obtained by some sort of weighting, and the principle of weighting must be adequate to the monetary argument in which it is to be used.

I wish to state in passing that there is, indeed, nothing revolutionary or even unusual in introducing an index into a theoretical argument. Always when we talk about capital "values," "prices" of consumers' goods, "wages," &c., and do not confine the discussion to a stationary system, we are, in fact, involved in the whole index problem. I think it is better to do that with our eyes open and to try to be explicit about the principle of weighting underlying the argument.

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### § 12. TECHNICAL DEVELOPMENT AND CHANGES IN RELATIVE PRICES

One difficulty arises, first of all, in dealing with technical development and the change of relative prices. Because of these two factors the new real capital is not constructed in the same way as was the old. Only by assuming unchanged technique<sup>4</sup> was I able to represent the anticipated "investment gain"—the difference between anticipated capital value and the cost of production of planned investments—by the relation  $c_1 - r_1$ . The significant point in Wicksell's argument is, of course, not the profitability of reproducing the existing real capital but the profitability of new capital ventures. We ought really to write  $c_2 - r_2$ , where  $c_2$  is the expected value of new capital, produced according to a new, technically optimal method, and where  $r_2$  is equal to the expected total cost of production of that real capital. Both  $c_2$  and  $r_2$  are difficult to obtain, particularly  $c_2$  which is not represented by a market value as is  $c_1$ , but which exists only in the calculations of the entrepreneurs. This was the reason for transforming the relation  $c_2 - r_2$  into  $c_1 - r_1$ .

In our approximative formula,  $r_1$  should be adjusted by a corrective factor before  $c_1$  and  $r_1$  are compared. This factor should represent as exactly as possible the *difference in the expected net return* on a given sum if invested, on the one hand according to the old method of construction, and on the other hand according to the new optimal method. Account would have to be taken of a change in the optimum size of the unit of production. The expected net return in both cases would obviously be defined as the  $e$  in the formula above for the net return, i.e., as  $e = b - (m + d)$ .

A corrective factor, constructed in such a way, would

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<sup>4</sup> *Vide* above, Section 8.

## MONETARY EQUILIBRIUM

solve the difficulties. Its definition is clear in theory. However, it would be impossible in practice to construct a fully satisfactory one for lack of necessary data. If this were the only difficulty it might nevertheless be possible to find coefficients of correction statistically applicable to different industries as approximations.

### § 13. INDETERMINATENESS OF PRICE FORMATION WITHIN GOING CONCERNS

Another and much more fundamental difficulty arises because real capital is tied up without exception in going concerns. The costs of different capital goods are very often joint costs, and revenues are even more so. Hence single capital goods have no definite capital values under dynamic conditions. Price formation *within* a firm does not exist and imputation is indeterminate. The book values are, mainly, mere fictions. The firms themselves are, therefore, the smallest units of price formation.<sup>5</sup>

But how shall we appraise the capital values of going concerns? One method would, of course, be simply to employ an index of the stock exchange values of shares and bonds of industrial enterprises. But only a small number of enterprises are listed on the stock exchange. And the enterprises which are listed differ, moreover, so fundamentally from the enterprises which are not listed on the stock exchange, not least in what contributes to the determination of their capital values, that they cannot possibly be regarded as representative in the statistical sense. The selection is just the opposite of random, and the statistical error is necessarily large and systematic in character. The firms which are listed on the stock exchange are, e.g., mostly well established in their markets, where they have monopolistic positions

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<sup>5</sup> Vide Myrdal, *Prisbildningsproblemet och föränderligheten*, p. 57 ff.

which the average enterprise does not possess. Hence the relation of their capital values (on the stock exchange) to the index of the cost of production cannot be regarded as typical of the factor determining the stimulus to real investments.

It is clear that such a stock exchange index has to be supplemented by capital values of other enterprises, which are taken from other sections of business—e.g., values of agricultural enterprises, of real estate, of industrial firms which are not quoted on the stock exchange, &c. This supplement might be possible on the basis of more complete price information about the various markets than is now available.

Even then such an index of capital values would be difficult to apply in the Wicksellian argument. The values of securities in particular are moved by many factors which are not important for actual investment activity. Their importance for investment, at least, is not proportional to their effect on the value of the securities. The control over investment in most great corporations is in the hands of small groups of individuals who have much more complete information than speculators on the stock exchange. They also have standards for their investment activity other than the rather fortuitous values in the securities market.

If the capital values are calculated in such a way that going concerns are taken as a unit, then something for the costs of organization, advertisement, &c., must be included in their cost of production. Account must be taken of this in the index. In itself this would, perhaps, not make an approximate statistical solution unattainable. If the magnitude reproduction cost is to be defined with reference to a going concern, it is more important to notice that a comparison with a state in which the concern is not yet in existence is implied. This would

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often mean comparison with a fictitious, unreal and, in any case, an absolutely unknown state.

If there is a way out of this difficulty, it may be to consider only such capital values and costs of production of such elements in going concerns as are immediately important for the investment activity actually taking place. A discussion of the methods to be applied cannot advantageously be carried out in the abstract. After pointing out the principal difficulties we shall now dismiss the problem and, for the sake of continuing the argument, assume henceforth that for individual firms a sensible and relevant index for  $c_1 - r_1$  can be constructed.

### § 14. PROFIT MARGINS AND THE VOLUME OF REAL INVESTMENT

In criticizing the stock exchange index as an index of capital values, we have again touched upon a still more fundamental difficulty which has its roots in an untenable abstract assumption of Wicksell. I refer to the assumption of "free competition" in the special meaning of complete mobility in the markets and of full competition between the entrepreneurs so that in equilibrium the natural rate of interest is automatically the same for all the different enterprises. A further assumption is that the entrepreneurs' activity commences immediately a difference in the interest rates appears, however small it may be. This is one aspect of so-called "rational behaviour."<sup>6</sup> Somewhat in contradiction to these assumptions, Wicksell had at the same time the idea of an inertia somehow "uniformly" distributed, with the effect that the cumulative process could be supposed to require time and not come like an avalanche.

Here we are up against the fundamental difficulty, touched upon previously, that we cannot assume the

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<sup>6</sup> *Vide* Ch. IX, Section 2.

differences between  $c_1$  and  $r_1$  to be the same over the whole economic system and to be zero for all in equilibrium. Under ordinary circumstances this profit margin must be of different magnitude in different firms; it is even positive in some and negative in others. Suppose that the profit margin,  $c_1 - r_1$ , could be obtained for individual firms. What principle is there for grouping and weighting differences in different branches of the economy to compose a general index? How could a general index be made which would indicate whether the economy as a whole exhibited conditions of monetary equilibrium, or, if not, how great and in what direction the deviation from equilibrium was? Some system of weighting is implicit in Wicksell's use of his own equilibrium formula.

Weighting according to the magnitude of the capital already invested cannot be correct from the standpoint of that formula. Weighting by that principle would not even be permissible if we could assume that the profit margin is equally large in two branches of the economy. In an industry with very durable capital and where fixed costs are relatively large, neither the extent of underutilization of output capacity nor the magnitude of real investment reacts in the same way to "bad times"—i.e. a negative profit margin—as in an industry where these technical data are reversed. The investment reaction, even for the same industry and for an equal difference of  $c_1$  and  $r_1$ , may depend on the direction of the movement. That economic processes are not simply reversible is especially true of investment. Furthermore, the monopoly element again plays a rôle here: A firm in a certain monopoly situation with respect to supply and demand will react in a different way to a shift in the profit margin than a firm which is exposed more to the pressure of competition. I emphasize that these difficulties, which are a result typical enough of every attempt to confront theory with reality, cannot be

avoided by neglecting the comparison. They are implicit in the argument from the very first.

This much, however, is clear: The rôle of the margin of profitability in Wicksell's monetary theory is to stimulate an increase in real investment. A shift in the direction of production arises which later brings about new changes in various price levels. This starts the Wicksellian cumulative process, which does not stop until the profit margin has disappeared again. This is the main argument of Wicksell's monetary theory. From this standpoint it is also clear that the combination in a uniform expression  $\sum (c_1 - r_1)$  of the difference of  $c_1$  and  $r_1$  which are found in different branches of the economy, has to be made by a method which *weights* each such difference with regard to its *effects on the amount of real investment, measured in cost of production*. The weights must be different for different branches of the economy, and they must depend on the sign, the size and the direction of movement of the profit margin, and on the general business cycle situation of the economy as a whole.

We define a firm's coefficient of investment-reaction as the ratio between the amount of net *new* investment—i.e., investment over and above the replacement of outworn old real capital—which it decides to undertake during a unit period and the amount of prospective investment-profit ( $c_1 - r_1$ ) necessary to induce this investment. These coefficients may be interpreted as average elasticities of investment with respect to profit. They are not constants, but depend on the size of the profit margin ( $c_1 - r_1$ ), among other things. They are, in fact, a mere symbol for an unsettled problem. That problem can obviously be solved only by a statistical study of the behaviour of different industries in different phases of the business cycle. The task is perhaps not quite hopeless with the methods and the materials which we may expect

in the future. In monopoly theory and the theory of joint returns and costs, we have instruments with the help of which such empirical studies of the elasticity of real investment could be organized. One great difficulty besides those already mentioned would be that this elasticity has to be conceived of as depending on the length of the period of reaction. That difficulty is, however, inherent in all discussions of elasticity.

We have to add that even very crude approximations would be better than none at all. If we even had relatively uncertain data for a number of branches of the economy, we could weight and combine observed differences between capital values and the cost of reproduction with the help of such approximate coefficients as could be provided from an intimate knowledge of circumstances in particular industries. The result though rough would be informative. If the data could be assembled regularly—especially if it could be kept up to date—it would permit us to make estimates of changes in the profit margin. Anyhow, it seems evident that Wicksell's idea that the profit margin determines the amount of investment cannot be upheld without resort to a system of weighting which takes account of the effect on investment.

#### § 15. INDETERMINATENESS OF THE FIRST EQUILIBRIUM CONDITION

Before we go further, let us sum up the results of the discussion in the last sections. The profit margin *for a firm* is:

$$q' = (c_1' - r_1')$$

where  $r_1'$  has been corrected by the coefficient which we have explained in Section 12. *For the economy as a whole* we have:

$$Q = \Sigma_w (c_1 - r_1)$$

where this difference is to be obtained by an addition

of the differences  $(c_1 - r_1)$  in the various branches of the economy. In adding, the differences  $(c_1 - r_1)$  of various firms are weighted according to the coefficient of investment reaction. It is implicit in Wicksell's discussion that when  $c_1 - r_1 = 0$  no *new* investment is made. The counterpart of this equation for the economy as a whole—Wicksell's equilibrium condition that aggregate net new investment must be zero—may be written:  $Q = 0$ . It should be noted that  $Q$  may be interpreted as a sort of generalized measure of the opportunity for investment-profit in the economy as a whole. At the same time, it is defined in such a way that it is an actual measure of aggregate net new investment. Underlying the statement of this equilibrium condition is Wicksell's assumption of the net new investment being zero in a non-profit situation.

Wicksell's idea is that in such a situation there would be no tendency for the price system to deviate in a cumulative process in one direction or the other. The underlying assumptions are, however, very particular and must now be challenged.

The basic assumption, as has just been hinted, is that when prospective investment-profits are zero the entrepreneurs are just exactly replacing the old outworn real capital but do not endeavour to make new investment. The assumption is never clearly stated but can be inferred. It fits into a system where the profit margin is supposed to be equal in the whole system and everywhere zero in equilibrium and where the slightest margin is supposed to entice the entrepreneurs to embark on expanding investment. We have already dropped the supposition of equal profit margin by taking into account the profit differences actually existing. As monetary theory takes a summary view of the whole price system, we had then to bring these different profit margins together into an expression for the profit situation in the system as a whole. To do this we used a system of

weighting prescribed by the very function of the profit margin in the Wicksellian monetary theory, namely its being a stimulus to investment. We thus arrived at the equation stated above,  $Q=0$ . We now have, however, to ask why the zero-profit situation should mean monetary equilibrium.

It is natural that this basic idea should underlie the whole theoretical structure when the analysis is confined to a stationary state. For one of the many abstract assumptions of such an analysis is the very thesis, that when prospective investment gains and losses are zero, entrepreneurs just replace the old real capital but do not increase the stock of capital. Another assumption is that there is no new saving. Due to these two assumptions, the stationary system remains in equilibrium from the monetary point of view as well. But, as has already been remarked, there is, indeed, no need for a monetary theory in a stationary state; everything there is in equilibrium by definition. Wicksell's theory, on the contrary, is designed to furnish an analytical instrument for studying what happens in a dynamic system subjected to all sorts of changes. In a dynamic study, the assumption that lack of new investment is a necessary condition for monetary equilibrium is of doubtful validity, for the following reasons.

First, when in a dynamic state the technique of constructing real capital is continually changing, due to both the increase of technical knowledge and the change of the relative prices entering into production costs, it is in theory impossible to keep a strict demarcation between reinvestment and new investment.<sup>7</sup> In theory the total investment must be compared with the total amount of available capital disposal, including not only new saving but also amortization.<sup>8</sup> Second, in a

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<sup>7</sup> *Vide* Ch. V, Section 6.

<sup>8</sup> *Vide* Ch. V, Section 5.

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dynamic state new saving cannot be supposed to be zero. Some new saving or, exceptionally, capital consumption is always going on. There is, further, no reason why in monetary equilibrium saving should be zero. This means that, even if the amount of new investment could be estimated, one could not assume that just zero investment would correspond to monetary equilibrium. For if positive new saving should be going on, the second equilibrium condition would then not be fulfilled. Third, in a dynamic state all entrepreneurs cannot be supposed to keep their investment activity exactly at the level of replacement (capital-maintenance) whenever the profit-margin is zero. Their reactions might differ considerably in one direction or the other from one industry to another. All in all, we must come to the conclusion that the basic idea of identifying monetary equilibrium with a zero-profit situation cannot be upheld and that, consequently, even the equilibrium formula given last must be remodeled in order to correspond to the implicit function of the equilibrium concept in Wicksell's monetary theory, which throughout has been my criterion.

### § 16. DETERMINATENESS OF FIRST CONDITION DEPENDENT ON SECOND

In order to find the principle for the final remodelling of Wicksell's first equilibrium equation, we have to make his second equilibrium equation our premise and infer the profit equilibrium from the requirements of equilibrium on the capital market. This second formula for monetary equilibrium will be analysed more in detail in the next chapter. Here we confine ourselves to the preliminary statement that the equilibrium on the capital market means that total investment  $R_2$  just balances total capital disposal available ( $W = S + D$ ).<sup>9</sup> The profit margin which

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<sup>9</sup> *Vide* Ch. V, Section 5.

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corresponds to monetary equilibrium is, therefore, the *complex of profit margins in different firms which stimulates just the amount of total investment which can be taken care of by the available capital disposal.*

In every firm the amount of investment is a function of its profit margin:

$$r_2' = f(c_1' - r_1') = f(q).$$

The form of the function varies with circumstances mentioned above when discussing the coefficients of investment-reaction.

For the economy as a whole,

$$R_2 = F(q', q'', q''', \&c.).$$

In monetary equilibrium we have  $R_2 = W$ .

We are now deep in the problem of the capital market. I emphasize once more that the whole discussion in this chapter has been an immanent critical analysis of Wicksell's first equilibrium formula, that is, of his statement that monetary equilibrium can be stated as the condition that the "natural rate of interest" be exactly equal to the "money rate of interest." I have shown: (1) that the "natural rate" has to be redefined as a rate of profitability in a system in which money and credit are included; (2) that this rate of profitability must be the yield of planned investments; (3) that the profit margin expressing the difference between the "natural rate" and the "money rate" can be equally well represented by a margin between the capital value and the cost of production of planned real investment; (4) that this last relation (with certain approximations) can be replaced by the relation between actual capital values and the cost of reproduction of old capital goods and that for reasons of practical measurability this reformulation has to be made; (5) that even thus redefined profit margins in different branches of the economy are very difficult to ascertain; (6) that they have to be weighted by the elasticities of investment, in

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order to give an expression for the profit margin in the economy as a whole; and (7) finally, that the zero-profit margin cannot be the criterion of monetary equilibrium under dynamic conditions but the criterion is instead that profit margin which stimulates investment enough to bring about equilibrium according to the second equilibrium formula. The guiding principle in this immanent analysis has always been Wicksell's main argument.

The conclusion is thus that Wicksell's first equilibrium formula is inadequate. To be determinate it must be related to the second formula. Regarded from another point of view, the first formula gives the more intensive discussion of the causes—in terms of profitability—of the quantity of investment. In a positive presentation of the monetary theory the analysis ought, therefore, to start with the second formula instead of the first and treat the problems of profitability, discussed in this chapter, as an attempt to give a more penetrating explanation of the causal relationships expressed only in a very abstract way in the capital market formula. Our exposition of the contradiction and difficulties inherent in Wicksell's argument indicates that perhaps not very much of Wicksell's theory may survive a positive analysis of the causal determination of the formula for the capital market. The present author, nevertheless, feels that a fundamental part of Wicksell's theory will remain.

### *Notes on the Symbols used in the Text*

Values pertaining to individual firms are stated in small letters. Aggregate values for the economy as a whole are stated in capital letters.

Capital values and costs of production of existing real capital and new investment are defined as discounted values at the initial point of time and are independent of the unit-period. All other values are calculated *ex*

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*ante*, i.e., for a given period as anticipated *at* the initial point of time.

e—Net return.

b—Gross return.

m—Gross operating costs attributed to the co-operating means of production.

d—Value-change defined as anticipated depreciation minus appreciation.

i—Market rate of interest (the "money rate" of interest).

$y_1$ —Yield of existing real capital.

$y_2$ —Yield of new investment.

$r_1$ —Cost of reproduction of existing real capital.

$r_2$ —Cost of production of new investment.

$c_1$ —Value of existing real capital.

$c_2$ —Value of new investment.

q—Profit margin.

S—Savings proper.

W—Free capital disposal ( $S + D$ ).

Accents are attached to small letters to distinguish values pertaining to different individual firms.

Subscripts  $_1$  and  $_2$  signify that the values refer to existing real capital or new investment respectively.

The subscript  $_w$  is used independently of the meaning of the capital letter to indicate a weighted index.

## CHAPTER V

### THE SECOND CONDITION OF MONETARY EQUILIBRIUM: "SAVING" AND "INVESTMENT"

#### § 1. THE SECOND CONDITION FOR MONETARY EQUILIBRIUM IN WICKSELL'S SYSTEM

Wicksell's second criterion for the determination of the monetary equilibrium relates to the situation in the capital market. The money rate of interest is said to be "normal" if it brings about equilibrium between the supply of and demand for savings, i.e., *equality between "saving" and "investment,"* as the modern expression runs. This implies, according to Wicksell, that the "money rate of interest" is kept at the level of the "natural rate." If the "money rate" falls below the "natural rate," equilibrium on the capital market, too, is destroyed; investments then surpass the amount of real capital formation which the "real saving" would permit. "Artificial purchasing power" has to be created in the form of an expansion of bank credit, along with a gradual increase in the amount or the velocity of bank notes, or of both. If on the other hand the "money rate" rises above the "natural rate," the reverse takes place. In both cases a cumulative process is started, according to Wicksell, either in one direction or the other, of the kind which we have indicated in the second and third chapters. By means of the relation between the "money rate" and the "natural rate" of interest Wicksell had rooted his monetary theory in the central theory of price formation. By completing his studies with an analysis of the capital market Wicksell also sought to connect his own formulation with the old

## “ SAVING ” AND “ INVESTMENT ”

doctrines of quantity theory. The quantity theory itself is thereby given depth, but at the same time is theoretically modified in certain respects and, in fact, dethroned as *the* monetary theory. For the emphasis in the explanation is definitely shifted from the surface level of the mechanism of payment—to which the quantity theory is restricted—to the deeper level of the central theory of price formation. In the following we shall not go further into this connexion between Wicksell's monetary theory and the quantity theory.

These are only introductory remarks in order to indicate the theoretical purpose and rôle of Wicksell's second definition of the normal rate of interest. Wicksell himself has set forth this second formula only very loosely and obscurely. But here again it is possible to arrive, by an immanent analysis guided by Wicksell's main argument, at such a formulation of the definition as Wicksell would have given, had he worked through his train of ideas more carefully. It is all the more important to carry out the analysis of the second equilibrium formula since at the end of the last chapter we came to the conclusion that the first equilibrium formula is inadequate alone—except under very abstract and unrealistic assumptions made by Wicksell—but must be based on the second formula. From the point of view of monetary theory, the rôle of the first formula is merely to explain *why* and *how* equilibrium is or is not maintained in the capital market. From the point of view of the central theory of price formation, the rôle of the first formula is to make it possible to embrace monetary theory within its own framework, especially within the theory of capital and interest.

### § 2. “ SAVING ”

The obscurity in Wicksell's discussion of the second formula comes from the fact that he has never really

defined what he meant by saving and investing—or by supply of and demand for savings, as he usually says—and the fact that he has even less clearly shown the connexion of this relation with the profit relation discussed in the last chapter.

For the time being we shall start with the preliminary definition that investment, or “demand for savings,” means real investment.<sup>1</sup> The question is then only what is meant by saving or the “supply of saving” (*Sparmitteln*).

One thing is clear at the outset, namely, that Wicksell did not mean, and could not mean, “investment in real capital” when he said “saving.” The idea underlying his whole analysis of the capital market is that investment and saving are not identical but that they can be compared. They can then in a given situation be found equal or unequal. The second equilibrium formula says that when they are equal, but only when they are equal, the price system will be in monetary equilibrium; otherwise the system must be rising or falling and with an impetus determined by the sign and the magnitude of the difference.

This idea of the non-identity of investment and saving is so fundamental to Wicksell’s whole theory—and is, furthermore, as we have already pointed out, so obvious to the practical mind—that it might seem strange that Wicksell did not emphasize it more explicitly. On the contrary, Wicksell and most of his pupils often write as if they meant by saving something more “real” than the traditional definition of saving proper as the part of the net income which is not consumed. Even in monetary argument the term saving is often described as “*setting factors of production free from the production of consumption goods for the production of real capital*,” and the expression “capital formation” (*Kapital-*

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<sup>1</sup> About possible definitions of “investment,” *vide* below, Section 6.

## “ SAVING ” AND “ INVESTMENT ”

*bildung*) is used often for “ saving ” as well as for “ real investment.” Here again an idea is wrongly taken over intact from the central theory of relative prices, where one abstracts from monetary problems and where one therefore need not distinguish between saving and real investment.

Now it must be obvious that, if saving is to be distinguished from real investment, monetary analysis is precisely where a “ real ” definition of saving *cannot* be used. The distinction *has* to be made since Wicksell’s monetary theory deals with an agreement or a discrepancy between the two. The change in the process of production proper, to which he refers, and in which “ saving ” is said to be expressed, is, from the standpoint of demand nothing but real investment. Even if this change meant the absence of equilibrium between the natural and money rate of interest, as in Wicksell’s cumulative process, there would still exist an exact correspondence between “ real saving ” and real investment, since both terms are expressions for the same thing. This “ real ” conception of savings is, therefore, of no use at all for the formulation of the criterion for monetary equilibrium, however useful it might be in other respects. We might observe at this point that the bookkeeping balance appearing *ex post* between saving and investment is quite another problem.<sup>2</sup> An increased saving does not in itself imply or cause a change in production in a more capitalistic direction—generally just the contrary. The *ex post* balance comes about not by a corresponding increase in investment but by losses destroying part of incomes to be accounted for *ex post* and, consequently, destroying part of the unconsumed portions of those incomes, namely savings—an increase in which had originally been assumed.

When, therefore, in modern literature, we wish to

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<sup>2</sup> *Vide* below, Sections 14-16.

distinguish more consistently between saving and real capital formation, we are able only to define "saving" as a part of *income*, namely that part which is not used in the *demand* for consumption goods. The term "income" is here and in what follows defined synonymously with "net return" as defined in the last chapter. Wicksell's argument then is that saving and real capital formation are not necessarily linked together; intermediate between the decision of the saver not to consume his whole money income and the decision of the entrepreneur to make real investments with his own or someone else's capital, is the whole process of price formation, particularly all those relations of price formation which are studied in monetary theory. But then of course the claim has been dropped that there is something "real" in real capital formation to correspond directly with saving. *From the standpoint of the capital market, this distinction between saving and investment is the essence of the modern monetary theory which starts with Wicksell.*

### § 3. A CHANGE IN ANTICIPATIONS: AN ABSTRACT EXAMPLE

After the term saving is defined the following problem appears. What does equality between real investment and saving mean? Does this equality determine monetary equilibrium? The criterion to be applied in the analysis of this problem as in our immanent criticism throughout, is the basic hypothesis of Wicksell's monetary theory.

I shall first illustrate one side of the problem by a very abstract example. The example chosen is not constructed to fit any actual situation. Its only merit is its capacity to cast light in a neglected corner of our present problem. Assume as usual an economy in complete monetary equilibrium on the capital market—which does not mean a stationary state but only the absence of a cumulative

movement in one or the other direction. Nothing now happens except that the entrepreneurs for one reason or another form considerably more optimistic ideas of the future returns on their real capital. Assume further that the money rate of interest is immediately increased enough to keep the capital values constant in spite of the greater optimism of the entrepreneurs with respect to the future returns.<sup>3</sup> But even if the capital values are thereby kept constant, the net returns on the real capital are higher after such a change of the price expectations than before. The net returns have increased since the rates of anticipated value-change to be deducted from gross returns have decreased, i.e., the costs arising from the depreciation of real capital are smaller, and/or the revenues from appreciation have become larger.<sup>4</sup> The increase of the net return is self-evident, even without express introduction of the items of depreciation and appreciation into the income calculations; it cannot be denied that more optimistic price expectations tend to increase capital values. Since, according to our assumption, the rate of interest has been increased in order to keep the capital values constant, higher rates of interest have to be calculated on unchanged capital values. No reasons are evident to indicate that other incomes should have decreased; the total income of society, therefore, has necessarily increased. We now assume, furthermore, that the economic subjects on the

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<sup>3</sup> I disregard here the fact that a change in the rate of interest has different effects upon the different kinds of real capital, depending upon their different degrees of durability. The neglect of this point can be formulated in the simplifying assumption that all real capital goods are equally durable, or—perhaps a still better assumption—that the more durable real capital is, the higher price expectations rise.

<sup>4</sup> The rate of depreciation has become less, partly because of the more optimistic price expectations, which require a smaller decrease in value, and partly because of the assumed increase in the rate of interest: Cf. Ch. IV, Sections 4 and 5; Ch. V, Sections 7 (Note 8) and 8 (Note 1).

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whole spend an unchanged amount of the increased total income on the purchase of consumption goods. That means that total *saving* defined as the part of the income which is not consumed, has *increased* by just the absolute amount of the increase of the total income.

What will happen now to the price level of consumption goods under the stated assumptions? Nothing. There is no reason why the production of consumption goods should change. Since that part of the total income which is used in the demand for consumption goods has remained unchanged too, the price level of consumption goods will remain unchanged. Capital values and wages are unchanged, and so are all incomes other than capital incomes. Since the money rate of interest has increased in agreement with the changed anticipations and the changed yield of investment, there is no extra stimulus to investment.

Real investment, therefore, will proceed at exactly the same rate as before, and in exactly the same branches of production, but saving will nevertheless have increased. We would then have the curious circumstance that saving had increased, while total investment had remained unchanged, and all in full accord with the monetary equilibrium condition, since the profit margins have not changed.

### § 4. FURTHER DISCUSSION OF THE SAVING CONCEPT

At this point the reader may raise the following objection: "The conclusion, to which the argument leads, rests simply on the fact that in the example chosen income has been made dependent upon price expectations. A more optimistic expectation of the entrepreneurs means therefore increased income in spite of the fact that the amount of products has not increased. Since saving has been defined as the part of the income which is not consumed, saving has necessarily increased as an

## “ SAVING ” AND “ INVESTMENT ”

immediate consequence of this change in the price expectations. But this cannot be correct. Even if, for the reasons given above, saving has to be defined with relation to income in order that saving and investments can be distinguished at all, it should still be possible to give a more ‘ objective ’ or ‘ real ’ content to the concept of income and hence of saving; which would imply here, at least, making the concept of saving independent of the purely subjective changes in price expectations. And then the proof given in the example above would be no proof at all. For, from a ‘ more objective standpoint ’ one could not say that saving has increased as long as the two processes of production and consumption simply continue as before.”

To this I answer: Income from durable objects can be determined only by a sort of imputation (*Zurechnung*) to the different periods of time enclosed within the whole durability of the real capital. Such an imputation must take account of future prices and quantities as well. It is necessary to make this imputation if one wants to understand by income something different from mere consumption. But the latter cannot be meant in defining saving as that part of income which is not consumed. The result of the particular imputation to periods of time by which the income for one period is derived, and hence the income itself, is determined by the rate of interest and by all price expectations entering into gross returns and costs in the way which we elucidated in the last chapter. The dependence of the present income on future price expectations appears theoretically in the analysis of the rates of anticipated capital value-change (depreciation and appreciation), with which we have to calculate in this particular imputation between present and future. As soon as saving is related to income and the attempt to give it a “ more real ” definition by identifying it with a change in production is abandoned,

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any attempt to determine saving "more objectively"—or "purely technically," i.e., independently of changes in price anticipations—cannot be defended.

If now in real life this subjectively determined imputation to different periods of time is made entirely "according to feeling," it is made nevertheless, and anticipations actually determine the amount of income for the period in question and hence the amount of savings. The mere admission that under dynamic circumstances changes of anticipation have *any* influence on income is sufficient to remove the concept of saving from the sphere of the "objective." There is only one way, as far as I can see, by which one could really construct such an objective-technical concept of saving: One would have to consider saving and investment as equivalent, as in the elementary exchange theory where the monetary problem is excluded by definition. But such a concept of saving would be of no use for monetary analysis, as already noted, where one wants to study the effects of a disparity between saving and investment.

I would add one further remark. One cannot arrive at a "more objective" determination of the concept of saving by making income (and saving) dependent upon only certain kinds of anticipation of value-changes which are "motivated objectively" or which relate only to "purely technical circumstances." From the standpoint of effects on profitability of the capital investments and the monetary equilibrium position—which is the decisive criterion—it is entirely irrelevant whether the changes in the anticipations were determined objectively or not. It makes no difference whether they are based upon (right or wrong) observations of purely technical circumstances which are of importance for the future course of events and the future results of the technical process of production into which the relevant real capital enters, or whether they consist in changes of future price expecta-

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tions All anticipations (as shown in the previous chapter<sup>5</sup>) play a part in the determination both of the rate of net return and of the capital value.

The fact that the size of our current income available for purposes of consumption or saving is in this way ultimately dependent upon our own subjective calculations, relating the present to the future periods by imputation, deserves increased attention in the explanations of booms and slumps. Thus it comes about that in certain conditions a sudden fall or rise in people's available incomes and consequently their consumptions and savings can occur, although the so-called objective circumstances do not justify the change.

### § 5. THE FORMULATION OF THE SECOND EQUILIBRIUM CONDITION

We return now to our abstract example and ask: What happens to the increase in savings? As monetary equilibrium is maintained, it must be invested somewhere. Does not the logical mistake hide behind a definition of the concept of investment that is wrong from the standpoint of Wicksell's monetary theory?

Certain possibilities can be excluded. Thus, the surplus of savings does not serve to cover capital gains. First, no capital gains have been made in the chosen example, since the money rate of interest has been assumed to have been adjusted in such a way that capital values have remained constant. Second, the criterion for gains and losses—as defined in the fourth chapter—provides that they may *not* be covered by saving or capital consumption.

The surplus of saving which has not yet been accounted for represents, instead, the difference between the items of *value-change which are valid before and after the*

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<sup>5</sup> Ch. IV, Sections 4, 5 and 7.

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*change of anticipations.* The surplus of saving is "invested" in an increase of appreciation and decrease of depreciation.

If one thinks of this decrement of value-change as an additional "investment" and places this kind of "investment" on an equal footing with real investment, then, of course, even in this case a correspondence between the supply of and demand for savings will exist under monetary equilibrium. But then it is not only the rise in real investment which brings about an increased "demand for savings" but also this increase of appreciation and decrease of depreciation. If one should agree to this definition of investment, one must, as a consequence, be prepared to reckon with such a queer notion as "negative investment." A negative investment would arise, e.g., if changed anticipations brought about an increased rate of depreciation. Such a negative investment would result if, in the example chosen, the change of the price expectations had been in the negative direction, i.e., if the entrepreneurs had become more pessimistic, and if the money rates of interest had been reduced correspondingly.

The Wicksellian equilibrium condition for the capital market should then be correctly formulated as follows: The money rate of interest is normal if it brings about an equality between saving and total "value-investment" where the latter expression has to be defined as gross real investment plus appreciation minus depreciation. If one wants to isolate real investment instead of saving on one side of the equation, one can formulate the second equilibrium condition as follows: The money rate of interest is normal if it brings about an *equality between gross real investment on the one side and saving plus total anticipated value-change of the real capital, i.e., plus expected decreases in value minus increases in value of the existing real capital, on the other side.* The

latter formulation seems more natural, and I shall base the following discussion upon it.

In this equation gross real investment,  $R_2$ , is compared with a magnitude, which I will call “ waiting ” or “ free capital disposal,”  $W$ , and which contains besides saving proper,  $S$ , the term anticipated value-change, i.e., depreciation minus appreciation,  $D$ . This capital disposal,  $W$ , is “ free ” from the standpoint of the private entrepreneur in the sense that, aside from the saved part of his income, and without selling or mortgaging his real capital, he can dispose of exactly such a part of the invested property value as corresponds to the amount of depreciation minus appreciation. For depreciation and appreciation are nothing else than calculated terms, subtracted or added to the balance of gross returns less operating costs only in order to make the net returns (=income) by definition congruent with the notion of interest.<sup>6</sup> Therefore, depending upon the nature of his real capital, the amount of free capital disposal is more or less than the individual entrepreneur—his income and his consumption being given—decides to devote to the increase or decrease of his property. On the capital market not only the saving but also the depreciation minus the appreciation constitute the “ supply of waiting.” “ Free capital disposal ” would correspond to the “ wage fund ” in classical theory, provided the concept was modified in such a way as to fit into a non-stationary analysis.

Wicksell’s second equilibrium formula should, therefore, be written :

$$R_2 = W = (S + D).$$

#### § 6. REAL INVESTMENT MUST BE RECKONED AS GROSS INVESTMENT

In the equilibrium formula real investment has been

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<sup>6</sup> *Vide* Ch. IV, Section 4.

calculated as a gross magnitude, which should be kept in mind. Investment, therefore, includes "re-investment" as well as "new investment." When one considers, as monetary theorists often do, only that part of investment which represents *new* investment, one should also consider on the other side of the equation only that part of capital disposal which represents an increment, over and above depreciation-minus-appreciation, made available during the period. For new investment means the growth of real capital.

However, this whole train of thought is at least artificial. For once one has abandoned the stationary or quasi-stationary models in the analysis of price formation, one can theoretically distinguish new real investments from re-investments only by diminishing the total investment by the anticipated value-change of real capital. But in doing so one again implies in the concept of new investment the very item which one wanted to exclude by talking only about saving and new investment. Since we can talk of depreciation and appreciation only as value aggregates and since they must be subtracted from gross investment to give new investment, this latter term must also be conceived of as a value sum ( $= R_2 - D$ ). There is, in other words, no possibility of separating a concrete amount of real capital construction as new investment, which could be singled out from the sum of all investments and distinguished from re-investments.

In general the idea is this, that the new investments are that part of the cost of production of the total real investments, which exceeds the cost of that real investment which is necessary in order to preserve the existing real capital unchanged in (real) value. In expressing the capital value of new investment and re-investment in monetary units the theoretical result contravenes the very intention of the quasi-stationary mode of approach, when-

ever general price movements are going on or are expected. If one tries to reduce the value of the monetary unit to a constant “ value of money,” one only carries the two notions further away from being more concrete parts of the whole because of the purely conventional element which is contained in any index calculation. And every determination of the value of money is made by an index calculation, either by tying up the concept of the value of money with consumption goods as Wicksell and Lindahl do, or by tying it up with production goods as does Davidson. But most important, depreciation and appreciation are by no means determined by the ruling prices of the present situation but by anticipated future prices which can hardly be included in calculations of index numbers without fantastically increasing their conceptual ambiguity, not to speak of the statistical uncertainty in the determination of these price expectations. The upshot of all this is that it is impossible to separate certain real investments which are intended to represent new investments as distinguished from other investments.

In a stationary or quasi-stationary economy it would of course be possible to separate the new investments from that part of gross investment which corresponds to the wear and tear in technical production and would represent amortization and replacement of existing real capital. In a purely stationary economy both new investment and saving would have to be zero. All real investments would represent re-investment. Quasi-stationary models of price formation can be imagined in which (1) changes are of such kinds and magnitudes that they cancel in their effects on prices, whence prices remain unchanged (e.g., in the “ uniformly expanding economy ” of Marshall and Cassel); or in which (2) the changes do not cancel their effects on prices but in which

they can be foreseen completely and with certainty.<sup>7</sup> In such quasi-stationary models of price formation, saving and new investment would not be zero. But re-investment could still be separated from new investments; the value of the latter would of course correspond exactly to savings. This would necessarily be so because of the assumptions which are contained in the general equilibrium concept and which have to be fulfilled over and above the assumptions of a purely monetary equilibrium. The re-investments and value-amortizations could, under these assumptions of a general equilibrium of price formation, be computed on technical grounds and separated rationally, and attention could then be concentrated on saving and new investments. But in these stationary or quasi-stationary models of price formation there does not exist, *ex hypothesi*, any monetary problem of the kind which arises out of an inequality of saving and investment.

If in monetary theory one sometimes speaks about saving and new investments, one is proceeding from a wrong static analogy. For one has then more or less expressly assumed that new investments and re-investments can really be separated technically. But this cannot be done in reality; and the equilibrium formula which we have given above, in which the gross magnitude of real investment is set equal to saving plus depreciation minus appreciation, contains everything that can be said. An equilibrium formula which shows the net amount of new real investments can be formulated easily: One would only have to deduct depreciation minus appreciation from both sides. The new "real investment" is thus transformed into "value investment" as we have called it above, i.e., gross real investment plus appreciation minus depreciation of the existing

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<sup>7</sup> Myrdal, *Prisbildningsproblemet och föränderligheten*, Stockholm, 1927, p. 67 ff.

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real capital. By this we express the fact that the new “ real investment ” can be represented only by a *value-sum*, the size of which changes as the rates of appreciation or depreciation change, even if the total real investment remains unchanged. The new investments are, in other words, only a part of the value of real investment, and its value as well as its proportion in the total are variables dependent upon price formation. These variables may be determined only along with the price formation itself as part of a study of the total economic system, wherein the subjective anticipations play a decisive rôle.

By real investment I shall always mean, in what follows, the total real investment without any division into re-investment and new investment.

### § 7. THE CASE WHERE THE RATE OF INTEREST IS UNCHANGED

By having thus explicitly stated the second equilibrium formula,  $R_2 = W = S + D$ , and made the implied content of the concepts more definite, we have cleared the ground for further analysis of the problem. We now return to the clarification of the mechanism of equilibrium and disequilibrium from the point of view of Wicksell's second equilibrium condition. I repeat that in the abstract example (Section 3), the monetary equilibrium condition was fulfilled in spite of changes in the anticipations. This was possible because the two components of the free capital disposal—namely the saving, which increased, and depreciation minus appreciation, which decreased—changed by exactly the same amount but in opposite directions, so that the sum remained unchanged. Real investment, on the other hand, also remained unchanged. No disturbance of the equilibrium position was, therefore, caused by the primary change of antici-

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pations. But this was only so due to certain assumptions we made, namely: (1) that no other primary changes occurred, (2) that consumption remained the same in spite of increased income, and (3) that the money rate of interest was raised just enough to keep capital values unchanged. We shall now drop these assumptions, the last first, in order to investigate how the items in our second equilibrium equation behave in disequilibrium.

Assume as before an initial situation of monetary equilibrium,  $R_2 = W$ . Then there occurs, as in the former case, a change to more optimistic expectations by entrepreneurs in regard to the future yield of real capital. Consequently capital values increase if, as we will now assume, the *money rate of interest remains unchanged*. Capital incomes then rise too (the same rate of interest being obtained on higher capital values).<sup>8</sup> Assume, further, that the economic subjects devote an unchanged purchasing power to the demand for consumption goods, as in the former case. Saving has then increased by the total amount of the increase in incomes, as before. In this case, however, certain capital gains immediately result which are directly neither income nor saving. Income and saving increase only by the amount of interest on the increment of total capital values due to the capital gains. In the initial position there is no tendency toward a movement of the price level of consumption goods. The unchanged supply of consumption goods encounters an unchanged purchasing power as demand. The increase in incomes has in this respect been compensated by an equivalent increase in saving.

If we now look at the terms of our equation for equilibrium in the capital market,  $R_2 = W = S + D$ , it is

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<sup>8</sup> *Ceteris paribus*, capital incomes do not rise as much as in the former case. The net returns rise, in this case as in the previous one, because of decreased depreciation, but the depreciation has decreased in this case *only* directly because of the more optimistic anticipations, but not, as in the case before, because of an increased interest rate as well. Cf. Section 3, Note (4), and Section 8, Note (1).

obvious that saving has increased, but that depreciation minus appreciation has decreased. Since we let saving grow by the exact amount of the increase of income, and since income has increased only because of smaller depreciation and larger appreciation, obviously the sum which we called free capital disposal has remained quite unchanged.

On the other side is real investment. There will immediately be a tendency for it to increase. For the profit margin,  $q = (c - r)$  will in all firms have risen in consequence of the increased capital values, and will stimulate investment. Equilibrium therefore is disturbed, and the tendency to increased investment, as there is no corresponding tendency as regards free capital disposal, must be met by a creation of purchasing power to which no capital disposal corresponds.<sup>9</sup> The increase of investment signifies, therefore, a tendency towards the typical shift of production in the upswing of Wicksell's cumulative process. Consequently, the demand for production goods rises, their prices increase, an increased demand for consumption goods results out of the new incomes, and—if free factors of production are no longer available—there also ensues a decreased production and decreased supply of consumption goods. The result will be that their price level rises and capital values jump upwards again. And during this whole process there is, for the reasons given, a discrepancy between real investment and free capital disposal.

Now, assume further that under the given assumptions and in the initial position the entire increase in income is not saved but that a part of it is used as *increased demand*

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<sup>9</sup> In the *ex post* calculus we will find certain capital gains resulting from the increased capital values; to this increase of capital disposal, however, corresponds an exactly equal increase in the value of real capital to be booked. This increase of the capital disposal, which is not the result of saving, is, in other words, already tied up at the moment it arises (*Vide* Section 14). It does not represent *free* capital disposition.

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*for consumption goods.* This assumption is more realistic than the previous one. Savings will nevertheless have increased, though not by the total increase of income. Under these circumstances the price level of consumption goods would exhibit a tendency to rise right from the start, which would, of course, accelerate the Wicksellian process.

It is obvious that under these circumstances there is a tendency from the beginning toward disturbance of the equilibrium between real investment and free capital disposal by a movement on both sides of the equation in opposite directions. Real investment *increases* because of a rise in the profit margin: Free capital disposal *simultaneously decreases*; for although saving has increased, it has not increased by as much as the total increase in income which results from the decreased depreciation and increased appreciation. The sum of saving plus depreciation minus appreciation, that is free capital disposal, has therefore decreased.

### § 8. THE CASE WHERE MONETARY EQUILIBRIUM IS DISTURBED BY LOWERING THE RATE OF INTEREST

In all our examples so far the primary change has been a change in anticipations. For completeness we shall now discuss Wicksell's standard case in order to see how the equilibrium on the capital market then appears: A position of monetary equilibrium ( $R_2 = W = S + D$ ) is disturbed by lowering the money rate of interest.

Increased values of the real capital immediately result. The profit margin rises, and consequently a tendency towards *increased real investment* is brought about in this initial position. The tendency of one term of the second equilibrium equation is thus known.

The situation is somewhat more complicated in regard to free capital disposal. If, for simplicity's sake, we

assume first unchanged anticipations, then a lower interest rate means immediately *increased depreciation and decreased appreciation*.<sup>1</sup> The gross returns minus the cost of the co-operating means of production have to be diminished by the increased depreciation of the real capital which is expected during the period, while a correspondingly smaller appreciation has to be added, in order to arrive at the income.<sup>2</sup> The expectations of gross returns and operating cost are assumed unchanged in this initial position. This means of course that incomes decline. If we now assume, furthermore, that consumption in the initial situation remains unchanged, then saving decreases of course, but only by the amount by which depreciation has increased and appreciation has decreased. Free capital disposal has thus remained unchanged. The tendency towards disturbance of the equilibrium in this case would come exclusively from the tendency of real investment to increase.

If now *anticipations*, too, were to change in an optimistic direction, which would necessarily occur sooner or later when the money rate has been lowered, this would in itself have no effect on free capital disposal if consumption remains constant. Free capital disposal would thus remain unchanged,<sup>3</sup> while real investment would of course be further stimulated by the altered anticipations causing the profit margin to rise more than it should have under constant anticipations. But if, with increasing incomes (increasing because of the change in anticipations), the *demand for consumption goods* rises

<sup>1</sup> This is most apparent if one imagines the entrepreneur to keep a sinking fund into which he pays in order to keep his capital unchanged (for our definition of income includes net receipts after provision for maintenance of capital). The payments into this sinking fund must of course be greater if we think of them as being accumulated at a lower interest rate.

<sup>2</sup> *Vide* Ch. IV, Sections 4 and 5.

<sup>3</sup> Because of the equal and opposite effects of the change in anticipations on the two components of free capital disposition, saving, and depreciation minus appreciation. Cf. above, Section 7.

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too, then free capital disposal declines, while at the same time real investment increases still more.<sup>4</sup>

### § 9. DISTURBANCE OF A MONETARY EQUILIBRIUM BY INCREASED SAVING

We now turn briefly to a case often discussed in the literature and ask: What are the monetary effects of increased savings? We again choose as starting position a state of monetary equilibrium, defined as equilibrium on the capital market. In this situation the curve of saving changes so that total saving increases. This is the only primary change, which implies among other things that the money rate of interest and general credit conditions remain unchanged.

In this initial position we have, along with increased saving, unchanged rates of depreciation and appreciation—as long as the price expectations are assumed to be unchanged. Since saving has increased, primarily, *free capital disposal* has increased too. *Real investment* is not directly stimulated (we shall presently see that the reverse will very soon be the case). It is then obvious that the increased saving immediately brings about a rupture of the monetary equilibrium in the capital market; for free capital disposal has increased, but not real investment. A downward Wicksellian process has thus been started.

Furthermore, it is obvious that real investments not only do not increase but must even decrease. For increased savings, defined to mean decreased demand for consumption goods, necessarily bring about some decrease in the prices of consumption goods. This fall in prices must itself tend to lower capital values by influencing anticipations; with the consequence that the profit margin will move in the negative direction, which naturally

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<sup>4</sup> Section 7.

means that real investments will decline. Equilibrium on the capital market is, therefore, disturbed not only by an increase in free capital disposal but also by a simultaneous decrease of real investment.

A downward Wicksellian process has thus been brought about by increased savings, where, paradoxically enough, the *increase* in savings continuously results in a *decrease* of real capital formation. This process does not stop except on these conditions: Either saving is lowered so much that it corresponds to the level of real investment—which means that saving must be reduced as much below its initial level as investment has been reduced by the primary increase in saving—or the rate of interest is lowered and credit conditions are eased to raise capital values and the profit margin enough to induce real investment to regain the level of free capital disposal.

#### § 10. THE CASE OF INCREASED SAVING WHEN A DEPRESSIVE PROCESS IS ALREADY UNDER WAY

In the abstract examples in this chapter we have so far always assumed that a primary change occurs in an initial position which fulfils the theoretical equilibrium condition. This condition is defined as  $R_2 = W = S + D$ . We have proceeded in this way purely with a view to simplicity and clarity. But our conclusions can be applied without difficulty to situations which do not fulfil this condition. Naturally the problem must be restated so as to inquire how far a primary change *augments or diminishes an existing deviation from monetary equilibrium*. We shall follow out the argument only for one kind of primary change. Referring to the discussion in the last section, I shall choose for this purpose the actual controversy concerning how far an increase in savings deepens or relieves an existing depression.

The assumptions are then the following: A downward

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Wicksellian process already has been in progress for some time. Capital values stand so low that in consequence real investment continually lags behind the free capital disposal available. In *ex post* bookkeeping, losses are registered (*vide* below, Section 14). The question is now, whether and how far increased savings would sharpen or ease the depression in such a situation, i.e. whether and by how much it would increase or diminish the negative profit margin which constitutes the driving force in the dynamic system. In order to know what we are talking about, we have to observe a strict *ceteris paribus*, which means, among other things, that the money rate of interest remains unchanged and that generally the same credit policy is pursued by the banks in both cases.

Referring to the former argument, this question is now easy to answer. The first and immediate effect of increased savings must be to accelerate the fall in the price of consumption goods. This again necessarily accelerates the fall of capital values, since the rate of interest has remained the same. Only through the more rapid fall of capital values and the greater decline resulting in real investment, can it have any effect on the cost of production of real capital. The latter, moreover, includes a number of inflexible prices, especially wages, while capital values are very sensitive. It is therefore obvious that increased savings necessarily decrease the profit margin—or, rather, increase the negative profit margin—and thus lower real investment. Furthermore, since the new saving has primarily increased the free capital disposal, we have two reasons for a stronger disequilibrium in the capital market than before. Our result is, therefore, that *increased saving, ceteris paribus, necessarily intensifies a depression.*

Decreased saving naturally has the opposite effect. The depression is mitigated by three successive consequences :

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First, prices are kept up in the consumption goods market; second, capital values are thereby maintained in relation to the cost of production of real capital; and, third, the volume of real investment is also kept up in relation to the amount of free capital disposal.

### § 11. THE OPPOSITE CASE OF CHANGED CREDIT CONDITIONS

It should be kept in mind that we have assumed the banking system to maintain credit conditions unchanged. The whole central monetary analysis is developed under the assumption of a *free currency* (*freie Valuta*) which means, in this connexion, primarily that the banking system can handle any kind of credit conditions; which itself requires that the banking system be able to satisfy all demands for credit. Otherwise a *ceteris paribus* for credit conditions could not be maintained, at least not in such an absolute and general formulation.

Arguments to the effect that increased saving would alleviate a depression are of course based on the assumption that increased saving makes possible easier credit conditions, especially lower interest rates, than would have been possible without increased saving. The easier credit conditions and the lower interest rates would then bolster up capital values and the volume of real investment. In this way one would get an alleviation of the depression as a consequence of increased saving, while we have asserted a tendency towards its aggravation.

This argument, in which one considers the credit conditions dependent upon the available saving and in which one consequently denies the possibility of the *ceteris paribus* assumption of the two preceding sections, implies that one does not assume a free currency. It is true that if the currency of a country is connected with gold or with another currency, or if the central bank of a country merely takes the international exchange rates into con-

sideration, the banking system contrary to our assumption above is not able to control credit conditions. That at least would be the situation if the reserve of gold and exchange was not sufficiently abundant to give enough "international leeway"<sup>5</sup> for national credit policy. It is therefore perfectly correct to limit the conclusions of the two preceding sections to a situation in which the currency is free,<sup>6</sup> or in which the assumption of *ceteris paribus* for terms of credit is justified.

## § 12. DISCUSSION OF THE OPPOSITE CASES

In other words, no theoretical contradiction between these opposite cases exists. Under an unrealistic assumption of a free currency and a *ceteris paribus* with regard to credit conditions, increased saving would aggravate the depression; but under more realistic circumstances in which the currency is always restricted some way or other, increased saving forms the basis for an easing of credit and therefore might mitigate the depression.

Against this last argument one must, however, point out that even if it were valid in itself (*vide* below), it would be only a counter-tendency against the primary tendency to deepen the depression. The latter tendency *must* in any case result from increased savings because reduced demand for consumption goods would immedi-

<sup>5</sup> Cf. Myrdal, *Finanspolitikens ekonomiska verkningar*, Stockholm, 1932.

<sup>6</sup> With regard particularly to the present situation (Spring 1932), it must be emphasized that no country has a free currency in the sense mentioned, not even countries which have left the gold standard. No country ventures to carry on a monetary policy without regard to the international rates of exchange, perhaps because of pure superstition; or because of curious considerations of national prestige connected with the old idea of a "favourable exchange rate"; or because of a rationally justified fear of retaliation by foreign countries, e.g., in the form of antidumping tariffs, &c.; or perhaps from fear of speculation on inflation; or, finally and mainly, because of such a combination of all these motives which cannot be analysed into its theoretical ingredients.

ately depress their prices and thus inevitably tend to lower capital values.

But it seems, further, quite improbable that even with a restricted currency (*gebundene Valuta*) an increase in saving should itself make a substantial increase and cheapening of credit available for investment. The contrary is more probable. For during a depressive process free capital disposal exceeds the volume of real investment even before the increase in saving; from the standpoint of the capital market this is the very force by which the depressive process is kept going. The quantity of the available capital disposal will usually be diminished in the course of a downward Wicksellian process, but the amount of real investment will decrease faster. Even if there is no extra saving, there would be more than enough available capital disposal.

Yet in spite of this unused surplus of capital disposal, the banking system under a restricted currency can nevertheless be prevented from increasing and cheapening credit by considerations of liquidity. It is this paradox of surplus capital disposal existing at the same time as an insufficient liquidity of the banking system—or the fear of insufficient liquidity—which confuses the argument so easily. But this paradox is really only apparent. The lack of liquidity is connected with the losses which the banks have made and are still making on their old commitments, and even more with the capital losses which they expect in future. Furthermore, it is related to the increased demand of the business world for liquid assets, stimulated by similar losses. “ New saving ” would in itself ease the credit market under these circumstances. But since saving in its character of decreased demand for consumption goods at the same time intensifies the depression and adds to the primary causes of illiquidity, it is probable, or at least possible, that the liquidity or the feeling of liquidity of the banks,

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and consequently their ability and readiness to increase and cheapen credit, is impaired rather than improved. In the latter case the fact that the currency is not free would give rise to an extra tendency to aggravate the depression, which would add its depressing effect to the direct effects of increased savings, already making themselves felt via a decrease of the demand for consumption goods.

That is not to say, however, that the opposite is not conceivable under special circumstances. Assume, for example, a country on the gold standard in a general world depression and assume that the major part of the country's demand for consumption goods is directed towards imports, or that at least the decrease of the demand for consumption goods which would result from increased savings can be shifted to the consumption of import commodities by trade policy or skilful propaganda. The decline in the demand for consumption goods, then, does not bring about a direct fall of capital values and the volume of real investment in this country. If now the aggravation of the depression in those countries from which this one imports, resulting from the increased saving, for some reason or other does not result in a decreased demand for the exports of this country, then naturally the credit market in this country can be relieved, and the increased saving would mitigate the depression in this country though it would intensify it all the more in others.

### § 13. THE PRACTICAL APPLICATION OF THE SECOND EQUILIBRIUM CONDITION

It would be ideal if the equilibrium formula could not only make possible general arguments of the type just exemplified, but actually furnish an instrument for analysing the tendencies of monetary development in a

given situation. The second equilibrium formula  $R_2 = W = S + D$  must, therefore, now be further discussed from the point of view of the possibility of making its terms theoretically more precise and suitable for observation.

The theoretical determination and practical observation of real investment hardly encounter great difficulties in principle. A practical difficulty appears in the fact that in specific cases one cannot always distinguish between the expenses which are to be counted as real investments and those which have to be taken as maintenance and repair of existing real capital. If they are included in operating cost, they must not at the same time be counted as real investment in order to avoid double counting in the equilibrium formula. Any decision here is necessarily purely conventional. However, the problem itself is hardly of any importance. For in so far as real investment is decreased by counting something as operating cost, the net return of the firm, and consequently the income and saving of some people, should naturally be reduced by exactly the same amount. If this is not done, and they actually have the same anticipations although they prefer to book the real investment as cost of maintenance of existing real capital, the anticipated value-change must react instead with a corresponding reduction. In both cases nothing is changed in the relation between gross investment on the one hand and saving plus anticipated value-change on the other. Actually this last expression—anticipated value-change—includes the whole difficulty which we shall presently discuss. This consideration shows that the magnitude  $D$  in our equation depends on that of real investment,  $R_2$ . Both have to be defined in a complementary manner.

There is only one point to add with respect to real investment; it has to be reckoned in this monetary

argument by the anticipated cost of production of the new real capital, measured in money; it must not be measured by its anticipated or realized value at the time of completion. For in that case the anticipated or realized investment gains would already be included in the real investment, which, of course, would be wrong, since only the actually anticipated costs, arising from a decision to make real investments, constitute an extra demand for free capital disposal.

The other side of the equation,  $S + D$ , is more difficult to ascertain in practice, even though it can be defined clearly in abstract theory. The difficulty in the practical application of the theory arises, of course, from the fact that in principle the expression *depreciation* minus *appreciation* cannot be represented by a more or less conventional amortization factor which could be determined on technical grounds or by the patterns of bookkeeping. We have just shown this in the preceding abstract example.

Yet in actual practice, as long as it is only a question of applying the second equilibrium formula, this difficulty is not as great as it appears (if we attempt to study the causation problems indicated by the first formula, the difficulty is greater; Ch. IV, Sections 4 and 7). An actual change in the factor of value-change, e.g., an increase in the depreciation or a decrease in appreciation, which in a given firm is not represented by a corresponding change of a conventional amortization factor, means, of course, only that the amount of depreciation has been reckoned too low. But if the same conventional amortization factor is used for the anticipated value-change in the calculation of the net return—that is, for  $d$  in the equation  $e = b - (m + d)$ —then income, and consequently saving, are underestimated by exactly the same amount. The two errors cancel in the sum of saving and depreciation making up free capital

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disposal, which thus becomes independent of the actual rate of value-change applied in the calculations.

From a purely practical standpoint the application of this second equilibrium formula would, therefore, probably not encounter insurmountable difficulties, provided we could get statistics of real investment, savings and amortization, and took great care not to count the same item both as real investment and as maintenance cost. Moreover, we should conscientiously have to deduct maintenance cost, an operating expense, from gross receipts and compute—with the amortization factor used in the calculation of amortization itself—the net return from which saving is derived by deducting consumption. Practically, the problem is even simpler, since one can for such purposes entirely disregard the “ internal capital formation ” of firms, which is hard to get statistically, both in agriculture and in industry. However, one must then be careful to see that corresponding amounts are deducted not only from investment but also from income, saving and amortization, so that these terms are also estimated at an appropriately low figure. The production of durable consumption capital can similarly be counted as real investment or not, as one chooses, provided only that a corresponding part of income is counted as saving or as consumption.

All the simplifications mentioned in this section can be made without signifying any approximation. The equilibrium formula remains absolutely exact in its monetary content. In this way the second formula—stating that under monetary equilibrium, free capital disposal is equal to total real investment—turns out to be relatively simple in its practical application. This should be quite important, particularly because in the end the first formula not only encountered great technical difficulties in application, but was found indeterminate *per*

*se*, having a definite meaning only when determined by inference from the second formula.

§ 14. APPLICATION "EX ANTE" AND "EX POST"

The great difficulty in applying this second formula of monetary equilibrium has, however, not yet been considered. For reasons examined closely in the preceding chapters, the concept of monetary equilibrium always concerns the *tendency of a situation at a particular point of time*. The quantities involved must be defined *ex ante*.

If one, on the contrary, should consider the *actual development during a past period* and compare *ex post* the capital disposal absorbed (invested) during this period, and the real investment made, then one would find that they have been equal, however little circumstances may have fulfilled the monetary equilibrium condition at any moment of this past period, i.e., however strongly the Wicksellian dynamic process may have run in one direction or the other. Such a subsequent correspondence for the whole economy is self-evident, for otherwise one would have to reckon with a rise of abstract property claims not balanced for the whole economy by a corresponding addition to individual claims and debts, a rise which nevertheless corresponds neither directly nor indirectly to the values of real capital (or cash). The question is simply: How does this correspondence *ex post* come about?

The subsequent correspondence obviously comes about through gains and losses. In the preceding chapter<sup>7</sup> we have distinguished three kinds of gains and losses:

- (1) *capital gains* and *capital losses* which arise because the entrepreneurs' anticipations of future revenues and costs change—hence the capital values of existing real capital increase or decrease even

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<sup>7</sup> *Vide* Ch. IV, Section 6.

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though the revenues or cost of the period just ended do not change;

- (2) *revenue* and *cost gains*, or *losses*, which arise because the revenue and costs actually realized during the period show a positive or negative divergence from the value at which they have been estimated in the preceding anticipations;
- (3) *investment gains* and *investment losses* which are the differences between the realized values of the newly constructed real capital and their anticipated cost of production.

Only the last two of these three kinds of gains and losses are instrumental in bringing about a subsequent correspondence between real investment and waiting.

The gains and losses of the first kind are changes of the capital values of the existing real capital, which at the time of their origin raise or lower the book value of the invested capital: this writing up or writing down the book value of real capital may be done directly. In that case the gain or loss is not reckoned as an item in the calculation of the *ex post* income of the period. If on the other hand the gain is added or the loss is deducted from the income of the period, saving is also increased or reduced by the same amount. But that part of the *ex post* saving must then be considered as invested or disinvested in the increase or decrease of capital value. In both cases the balance between investment and capital disposal is not influenced. These gains and losses have, however, another effect. They cause an increase or a decrease of the amount of value-change with respect to the part of the period remaining after they have occurred. But this change brings about, at the same time, an opposite change of the net return and consequently of saving, so that free capital disposal remains unchanged. These capital gains and capital losses therefore cannot represent compensation *ex post* for the difference *ex ante*

between free capital disposal and real investment. It ought to be added that, if the methods of bookkeeping are such that the terms of value-change are not corrected or corrected only in part with respect to the new capital values, which perhaps have not themselves been registered as changed in the capital accounts, the result is nevertheless an unaltered sum of saving plus value-change *ex post*. The last item also enters into the calculation of realized income and of saving.

It is different with respect to the gains and losses of the second kind. They arise directly from the fact that the entrepreneurs realize different gross revenues and gross costs than they have anticipated. In a calculation *ex post* these gains and losses are naturally calculated as elements of returns and costs and consequently of net return and income. Income and saving *ex post*, as an obvious matter of bookkeeping, are increased by those gains and decreased by those losses.

During an upward Wicksellian process the gains of this kind regularly exceed the losses, and in so far as they do not bring about a change in the demand for consumption goods, they have to be calculated *ex post* as saving. Therefore this saving in the *ex post* calculation is greater than that in the *ex ante* calculation by an amount which covers the difference existing between *free* capital disposal *ex ante* and (in this case) the greater *invested* capital disposal *ex post*. If the process is downward, the losses preponderate; free capital disposal *ex ante* is greater than the invested capital disposed *ex post* and the difference is in this case made up by losses. The result is, again, a correspondence between invested capital disposal and real investment calculated *ex post* for a concluded period.

To obtain an *ex post* balance on the capital market by means of including gains and losses of the second kind in the calculation of gross returns, costs, incomes

and consequently savings, becomes more difficult (larger gains and losses are required to realize it) when the demand for consumption goods changes very much during the period. Let us assume the case of a downward process. The decrease of income will diminish savings less, the more consumption decreases. The shift in the distribution of incomes, however, in favour of classes which save less at the expense of those which save more, which takes place during such a process, counteracts this decrease of consumption. In the degree to which consumption is maintained by such a shift, losses need not become as big as they must otherwise be in order to bring about the bookkeeping correspondence between capital disposal and value of real investments which is subsequently necessary. This means that the intensity of the depressive process is then not as great as it would otherwise be.

If the Wicksellian process has an upward direction, there is, as already mentioned, an increase in book saving, which erases the *ex ante* discrepancy between real investment and free capital disposal. The gains need not be as great and the dynamic process in general need not become as intensive in the case where consumption has not increased so much. The shift of the distribution of incomes in favour of classes with a relatively higher rate of savings, which is a consequence of a price rise, diminishes therefore the intensity of the dynamic process.

The balance between invested capital disposal and real investment is, however, brought about not only by revenue and cost gains and losses, but also to a certain extent by gains and losses of the third kind: The investment gains and investment losses. These arise because real capital which is newly constructed during the period received a higher or lower capital value, at the moment at which it is ready for use, than its anticipated cost of production. The real capital constructed during the

period is naturally not booked at the value of the anticipated cost of production. From a theoretical point of view the "right" method would be to book it at its capital value when ready for use. Between these two values there is a gain or loss consisting of (1) the difference between the anticipated cost of production of the real capital and the actually realized cost, (2) the difference between its capital value and its actual cost of production.

The first of these two elements has the same place in the mechanism as the second kind of gains and losses, namely the revenue and cost gains, or losses. It has, however, usually the opposite sign. During an upward process, when prices are rising, the difference between the actual cost of production of the real capital and the anticipated value of this cost, is usually positive and means an element of loss appearing as a realized demand for capital disposal greater than the anticipated demand. This element of loss has, therefore, to be deducted from the increase of *ex post* savings, due to gains of the second kind, which we have just spoken of as the instrument bringing about the *ex post* balance between invested capital disposal and investment. The reverse is the case if the Wicksellian process has a downward direction: A part of the decrease in saving, due to such losses, is compensated by the element of gain consisting in the decreased cost of capital construction; only the rest is active in creating the *ex post* balance.

The second of the two elements in the investment gains and losses—namely, the difference between the capital value of the newly constructed real capital and its actual cost of production—has no direct effect on the *ex post* balance between capital disposal invested and the value of real investment, as it enters on both sides in the equation. If, as is usually the case, the value of the newly constructed real capital is booked at its production

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cost, this element of gain or loss is not included at all in the *ex post* calculation. If, on the other hand, a difference between value of real capital and its actual cost of production is added to the income of the period, the *ex post* saving is thereby increased by the same amount as the additional value of the investment.

### § 15. THE BALANCE “ EX POST ”

During every period this continuous and necessary *ex post* balance between the amount of capital disposal invested and the volume of real investment must result, even if a Wicksellian process is present. For the reasons given, this in no way contradicts the continuous discrepancy between the two magnitudes in the *ex ante* calculations *at every moment during such a process*. The antithesis signifies only the general difference which exists between a subsequent “ bookkeeping,” which of course always “ balances ” no matter how great the changes which occur, and the anticipatory calculations, which need not balance if the system is not in monetary equilibrium.

However, it is not this meaningless balance in the subsequent bookkeeping for an expired period which is of interest to monetary analysis. Rather it is *the very changes during the period which are required to bring about this ex post balance*. The dynamic problem proper of the movement during a period can be discussed only if one starts with *the tendencies which exist in a certain price situation*, tendencies which are determined by the anticipations dominant in this situation. For these anticipations determine the behaviour of the economic subjects and consequently those changes in the whole price system which during a period actually occur as a result of the actions of individuals.

This must be emphasized strongly. As has been

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shown above,<sup>8</sup> it is impossible to approach the monetary problem by an analysis dividing time into a number of short equilibrium periods during which no changes occur. The changes would have then to be transposed to the timeless transitional points between these equilibrium periods. During the equilibrium periods one would have equilibrium on the capital market too, and this not only *ex post* and because of the changes which I have just discussed, but simply *ex hypothesi*, since all changes have been moved outside the equilibrium periods.

But this schema would be fruitless, for, as I have emphasized, it is just the intervening changes—the deviations from the earlier anticipations—which are of interest in monetary analysis, and obviously they cannot be comprehended by this method. The schema is not even possible, because the assumption just mentioned is untenable. During a Wicksellian process an equilibrium on the capital market appears only in retrospect and because of changes of the kind discussed, *which occur during the very period for which the ex post calculation has been made*. In other words: Such an “equilibrium period,” however short, cannot be assumed at all.<sup>9</sup> The method is a theoretically inadmissible mixture of the *ex ante* and the *ex post* analysis.

### § 16. A MEASURE OF MONETARY DISEQUILIBRIUM

It may be useful to sum up the discussion of the last two sections by stating the method of analysis to be followed in the *ex post* calculations in order to make visible the character of a period from the point of view of monetary equilibrium. The problem could be formulated more precisely thus: From an *ex post* calculation by what means can one ascertain whether during a past period

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<sup>8</sup> Ch. III, Section 9; cf. Ch. IV, Section 6.

<sup>9</sup> “Om penningteoretisk jämvikt,” *Ekonomisk Tidskrift*, 1931, pp. 228 ff.

monetary equilibrium has reigned or not, and, in the latter case, to what side of the equilibrium position the system has moved, and how strong the tendency to deviate is? In order to avoid ambiguity the problem must be related to a period short enough to be considered so homogeneous, that an average has a more definite meaning. If the period should include several phases of the business cycle the questions are naturally without meaning. In most cases even a single year would be too long a period. We ought rather to consider a single month.

The method of solving the problem must obviously be to eliminate from the *ex post* balance those elements which actively compensate for the *ex ante* unbalance and which have no equivalents in the *ex ante* calculation. These elements are (1) revenue and cost gains, or losses, and (2) the portion of the investment gains and losses which consists in a difference between the anticipated production cost of real capital and the actually realized cost. When a downward Wicksellian process is going on, the net value of the first is negative, but of the second positive; the sum total is negative. In an upward movement the reverse is true. In a state of monetary equilibrium this aggregate of the indicated gains and losses for the economy as a whole should be zero. Its magnitude should be a measure of the intensity of the tendency to deviate from equilibrium in the one or the other direction.

If, as an approximation, we assume that all economic subjects continually revise price-anticipations so as to make them conform to current prices, the net aggregate of certain gains and losses would be comparatively easy to compute. Thus one has only to ascertain the quantities of cost elements relevant for production of producers' and consumers' goods in various branches and to register price movements. Such an approximation is, however, not tenable as a general assumption. Lack of a valid

index of past anticipations makes monetary analysis of a completed period very difficult.

A further study of the problem would probably have to seek for indications of the aggregated gains and losses, defined above, in the flow of money and credit, i.e., by analysing the changes in volume and velocity of the means of payment. Such an analysis would have to start from the statement of the problem given above by contrasting *ex ante* and *ex post* calculations, of which the *ex ante* denote the driving causal factors, i.e., the tendencies at every point of time, and of which the *ex post* denote the outcome as subsequently registered. Between tendencies and outcome lie the actual changes to be studied. This analysis of the mechanism of payments would differ greatly in character from the quantity theory of money, for it would derive its whole conceptual apparatus and its statement of the problems from the analysis on that deeper level of price formation where the causal relations of demand and supply are studied.

We must leave unsettled the important question of how Wicksell's theory may be related to reality by restating his equilibrium formulas in observable and measurable terms. We have not hidden the difficulties. Through an analysis of the Wicksellian theory from the point of view of its applicability, we have traced the difficulties inherent in Wicksell's approach in a more efficient way than would otherwise have been possible. I quite understand that the weary reader may be inclined to believe that the chief result of our study so far is to prove that the theory is of only limited use in itself. The modest reply will be that even this result may be of some value just now when so much of all theorizing in monetary questions actually follows the lead of Wicksell's thought, without being very clear about the basic assumptions inherent in his theory. Either that trend in monetary theory is a blind alley, in which case it ought to be

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exposed as such as soon as possible; or else it should be possible, as most of us believe, to make the Wicksellian theory workable. A logical analysis of its very foundations and an exhibition of its present shortcomings is then a positive task to be fulfilled.

## CHAPTER VI

### THE THIRD CONDITION OF MONETARY EQUILIBRIUM: THE "PRICE LEVEL"

#### § 1. THE THIRD CONDITION FOR MONETARY EQUILIBRIUM IN WICKSELL'S SYSTEM

By a third determination of the monetary equilibrium position, Wicksell wished to relate it to the conditions on the commodity market. The normal rate of interest, he said, is the money rate which is just necessary in order to keep the "general price level" of finished commodities constant. However, Wicksell was unable to furnish a real proof of this proposition.<sup>1</sup> Moreover, this idea is false, as I shall presently prove. In order to make it understandable why and how Wicksell came to this assertion, I should like to start with some preliminary remarks linking together this idea and the other ideas of Wicksell previously dealt with in this essay.

Wicksell was, of course, quite aware that the concept of the "natural rate of interest" by means of which he sought to connect the "normal rate" and, consequently the position of monetary equilibrium, with the yield of real capital, was absolutely fundamental to his whole theory. For by this theoretical structure he succeeded in connecting monetary theory with the theory of interest

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<sup>1</sup> The theorem that equality between the money rate and the natural rate of interest presupposes a constant price level is worked out most clearly and consistently in *Geldzins*. In the *Lectures* and in a number of articles Wicksell shows an inclination to limit the theorem in certain respects (mainly with respect to the production of gold and generally to the so-called direct inflation). But he does not, as far as I can see, come to a clear and complete alternative construction. In the following I shall stick to the clearer formulation of the older work.

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and capital and thus with the whole central price theory. But as Wicksell had at his disposal a theoretical apparatus—now considered rather obsolete—which made him define the natural rate as a physical or technical marginal productivity, his whole formulation remained incomplete and full of contradictions, as I have shown in Chapter IV. The natural rate was determined only in an extremely abstract, theoretical sham-world, in which, in addition to other peculiarities, one abstracted from credit phenomena and hence from the money rate of interest. Thus Wicksell did not succeed in connecting the "money rate" and the "natural rate" of interest. As he had defined the natural rate, the two magnitudes could not even be theoretically juxtaposed. The difference between the money rate of interest and the natural rate remains, with Wicksell, necessarily a very hazy notion. And Wicksell could by no means consider the possibility of a statistical observation of the magnitudes implied in the first formula, which would have enabled him to decide in an actual situation whether such a difference existed and whether it was positive or negative.<sup>2</sup>

Nor was Wicksell much more successful in his analysis of the relationships in the capital market. Since he left his fundamental concepts of "supply and demand of savings" rather hazy, he never succeeded in pushing his analysis of the capital market far enough to reach a question which he could even think of to put directly to the statistical material.

However, here as elsewhere in his theoretical work, it was obviously the great practical significance of the monetary problem which fascinated Wicksell. His driving interest was the purely practical question of how to make the world free from the evil consequences of mone-

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<sup>2</sup> Wicksell always emphasized that it was impossible, or at least "as good as impossible," to determine the "natural rate of interest" in an actual situation by statistical observation.

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tary disequilibrium. Since the decisive parts of his argument did not furnish him with a practically useful formula for the monetary analysis of an actual situation, he tried all the harder to reach such a formula by a study of the relationships on the commodity market. But since he had not sufficiently clarified these decisive parts of his investigation—the yield on real capital and the relation of saving to investment—he could not derive from the two preceding equilibrium criteria a theoretically consistent equilibrium formula for the price level.

In fact, he accepted the comfortable formula of a constant price level more by sentiment and as a result of a normative, *a priori*, intuition. It was quite obvious that the dynamic process resulting from disequilibrium necessarily led sooner or later to a general rise or fall of prices. The conclusion was then handy although not very well founded, that equilibrium meant a “constant price level.” Wicksell seems, moreover, to have been convinced from the beginning that a change in the “price level” was generally harmful and economically unjustifiable.<sup>3</sup> And since monetary equilibrium was for him not only a theoretical instrument but also an ideal for monetary policy,<sup>4</sup> again he reached the conclusion that the money rate would guarantee an unchanging price level of consumption goods if it were normal and corresponded to the natural rate.

All this is of course very poor logic, but Wicksell never succeeded in setting up a theoretically tenable formulation. He was looking for a formula which was applicable to actual facts in order to be able to apply in practice the hazy results of his theoretical discussion of productivity and the capital market, a formula, moreover, which would satisfy his moral intuition. In this

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<sup>3</sup> *Geldzins*, pp. 2 ff. [pp. 2 ff.], and *Vorlesungen*, Vol. I, 2, p. 52, and others [Vol. II, p. 48, and others].

<sup>4</sup> *Vide* below, Ch. VIII, Sections 1 ff.

case the observation of changes in the "price level" offered a way out and a possibility of determining whether the "money rate" and the "natural rate" were in equilibrium. A formulation by no means clear in principle appeared to be correct because it proved to be "practical"; something desired became truth; a rather old experience in the history of economic doctrines.<sup>5</sup> And in emphasizing "the general price level" he established close contact with the traditions of the old quantity theory, which Wicksell never intended to displace but only to improve.

This section has been intended simply as a brief recapitulation of the preconceptions which influenced Wicksell's thinking.

## § 2. DAVIDSON'S CRITICISM

Wicksell's theorem that a constant "price level" was a condition of monetary equilibrium drew an immediate criticism from Davidson. In his famous review of "Geldzins und Güterpreise" in the *Ekonomisk Tidskrift*, 1899, and later in a number of articles in the same periodical, of which Davidson was and still is editor, he emphasized: If, *ceteris paribus*, the technical productivity of the means of production increases for some reason, the price level for finished goods must decrease

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<sup>5</sup> Wicksell's thought must have run along these lines. Compare, e.g., the following lines where he emphasizes that the banks should "bring the average money rate to agreement with the natural rate of interest of capital." "Not that the banks should in some way try to find out the height of the natural rate of interest on capital in order to determine their rate accordingly. This would, of course, be impossible, and at the same time quite unnecessary, since the height of commodity prices at any time is a reliable sign of the correspondence or non-correspondence of the two rates. The procedure would more simply be the following: If the prices were stable, the banks' rate would also have to remain unchanged; if prices increased the banks' rate would have to be increased; and if prices fell the rate would have to be lowered; and each time the new rate would have to be maintained until a further movement of prices required a new change of the interest rate in one direction or the other" (*Geldzins*, pp. 172 ff. [pp. 189 ff.]).

correspondingly or else the whole monetary system falls out of equilibrium and a typical cumulative process upwards is started.

The theoretical method by which Davidson tries to prove his statement is highly interesting.<sup>6</sup> He recognized quite correctly that the first equilibrium condition of Wicksell, which relates to productivity and profitability of real capital, was of central importance for Wicksell's whole monetary construction, and he therefore tried to prove that the third equilibrium condition now under discussion is really incompatible with the first. For, says Davidson, an increased productivity necessarily increases the "natural rate of interest," and, if the money rate of interest is not immediately increased correspondingly and a fall in the price level provoked, the monetary equilibrium is disturbed.<sup>7</sup> Having extra-

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<sup>6</sup> He introduces also a purely normative train of thought relating to an absolute "value of money," motivated by a classical cost of production theory of value. But we shall disregard this here as long as we are concerned only with the theoretical problem.

<sup>7</sup> The argument is formulated perhaps most clearly in the following extract from Davidson: "Increased productivity increased the expectations of profit as long as commodity prices remained unchanged, and consequently the natural or real rate of interest became too high with respect to the money rate. . . . This result seems perhaps perplexing, for it means that *starting with Wicksell's theoretical propositions* one arrives at practical results quite different from his objective, namely, constant commodity prices" (*Ek. Tidskr.*, 1909, p. 23, italics mine.) Wicksell's idea in monetary policy is, we know, that the continuation of such a process of deviation from an equilibrium should be stopped as soon as possible by an increase of the money rate of interest so that the *increase of commodity prices* which would otherwise result should be hindered. But just because there had been disequilibrium for a certain time—due to the fact that prices had not been lowered in proportion to the rise in productivity, and until the prices of factors of production had risen in the same proportion—it might be difficult to arrive at this result without a crisis: Thus one must interpret Davidson. Davidson was, furthermore, of the opinion that only by lowering commodity prices in proportion to the rise in productivity could the gains of that rise be distributed between the various social classes—entrepreneurs and workers, debtors and creditors—in a just and equitable way. In connexion with the present discussion of purely theoretical questions, Davidson's thesis interests us only in so far as it contains the statement that an unchanged price level does not guarantee equilibrium between money rate and natural rate of interest if changes in productivity occur.

ordinary respect for Davidson's scientific acumen, Wicksell was ready to make certain concessions to him regarding the monetary *policy* aspect with which we are not here concerned—as in respect of the import of the claim for “justice and equity” in the distribution of the gains of technical progress to the different social classes. But in the purely *theoretical* question he maintained his stand that a constant “price level” was a condition of monetary equilibrium.

The final clarification of this old controversy has, of course, been largely impossible because the basic notions of monetary theory (return, anticipated value-change of real capital, profitability, supply and demand for savings, &c.) have not been clearly enough defined. In particular, the rôle of anticipations has been disregarded, as I have already mentioned. This is rather serious in monetary theory, where almost everything depends upon an analysis of anticipations<sup>8</sup> and—as regards the course of things in time—upon the so-called inertia factor in price formation, by which one wishes to express the fact that the reactions of the factors in price formation cannot be instantaneous but require time in varying degrees. Another obstacle to the clearness of the arguments, which has been particularly troublesome in the discussion of the price level, has been the direct metaphysical coupling of absolutist, normative ideas and purely theoretical analysis.

### § 3. MONETARY EQUILIBRIUM NOT DISTURBED BY PARALLEL PRICE MOVEMENT

I would now like to follow Davidson and start with the theory of the “natural rate of interest,” which,

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<sup>8</sup> Wicksell, who always thought in quasi-stationary terms, nevertheless remarked occasionally, and not least in the discussion with Davidson, that one can arrive at quite different results depending upon the assumption one makes about anticipations.

as I have shown, contains implicitly the main argument of the Wicksellian theory. For the reasons given in Chapter IV, the first equilibrium formula is not determined otherwise than by inference from the more general second formula. The problem ought, therefore, to be formulated in the following way: What does a development of the price system, in which the profit margin is kept continuously at such a level that the condition  $R_2 = W$  is fulfilled, imply as to the tendency of the "price level"?

As far as I can see, nothing at all in itself. The fundamental equilibrium conditions refer to or depend on certain relations of prices, actual and anticipated—relations of prices for real capital and the means of production, which enter into the cost of production of real capital, for finished products, elements of operating cost, &c., and also the price of credit. If the equilibrium price relations (discussed in Chapter IV) are fulfilled, any movement of the absolute money prices consistent with them will leave monetary equilibrium undisturbed. The result would be independent of whether this general price movement is anticipated or not. For the anticipations can become significant for the profit margin only in connexion with changes in capital values included among the price relations just indicated.

As the second equilibrium formula is only a general though more formal statement of the equilibrium condition—the first formula signifies a more penetrating analysis of the causal factors—the same is true even if we look at the problem from the point of view of the capital market. In itself this second equation, which for monetary equilibrium requires correspondence between real investment and free capital disposal, indicates nothing about the movement of the absolute prices. If we think of a perfectly uniform price movement in one direction or the other, equilibrium on the capital market

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would not be disturbed. Both sides of the equation would increase or decrease in the same proportion and here, again, this is quite independent of whether such a price movement has been anticipated or not. For this second equilibrium condition, too, cannot be disturbed without a change of the price relations. This was already implied in the dependence of the first equilibrium condition on the second, as we have shown above.

The monetary equilibrium conditions would thus in themselves be quite independent of the development of prices. They would not determine the absolute price movement, but would fully determine certain price relations.

Wicksell as well as Davidson would thus appear to have been wrong: The development of the price level would seem to have nothing to do with monetary equilibrium. But we shall not be able to escape the famous old controversy as easily as that.

### § 4. THE SIGNIFICANCE OF LESS FLEXIBLE PRICES

In showing that the equilibrium conditions in themselves permit any movement of the level of absolute prices I had to add the reservation: Provided this movement is perfectly uniform for the different prices.<sup>9</sup>

This assumption, however, is untenable. First of all, there are credit contracts, stipulating fixed interest rates, and other contracts, which extend over a period of time. In any general price movement, therefore, which has not been anticipated with full certainty by all those having a part in price formation, the distribution of incomes and property must necessarily change. Consequently the demand and supply functions of

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<sup>9</sup> When I speak here and in the following of prices and price relations, I mean *all* prices: For means of production, semi-manufactured articles, finished products, &c.; in *all* markets—wholesale and retail market, labour market, &c.

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different commodities change and also their price relations, including the specific price relations relevant to monetary equilibrium. Even apart from such contracts, fixing returns and costs for certain economic subjects, there is a general element of *inertia* in the adjustment of the economic system to primary changes. Some prices react faster and some slower. Furthermore, under monopoly, or in markets with a small number of large competitors, going prices are often governed by a policy of price maintenance—even against violent changes in demand. Inflexibility of these administered prices may not be merely evidence of time lag but also of a different type of behaviour. In monetary problems, which by definition pertain to the short run, it is, however, of minor importance whether or not the stickiness of prices is a matter of time lag, as was usually supposed according to the old theory of *inertia* in price formation, i.e., it is a matter of indifference whether an adjustment would take place in the long run. Stickiness has essentially the same effect irrespective of its cause and character. Because of the stickiness of some prices, every primary change of some importance in the price system will disturb the parallelism within the complex of price relations.

Now it is certainly quite possible to think of the specific equilibrium relations, which are implied in the equations, as being fulfilled all the time, in spite of a certain “dispersion” of the non-specific price relations; namely by postulating certain changes of the money rate of interest—or, more generally, of the credit conditions—directed to this purpose. But under the assumption of a credit policy aimed at maintaining monetary equilibrium, the general price movement would pretty soon come to an end. The sticky prices would act as a restraint on the price system: A monetary policy aimed to preserve the equilibrium relations must, there-

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fore, *adapt the flexible prices to the absolute level of the sticky ones.*

There is significance in the abstract examples which we should need to choose in order to illustrate the general thesis that the monetary equilibrium conditions do not limit the general price movement. For we would need to use one of the two traditional abstractions of the central theory of price formation, by which one gets rid of the inertia in price formation—either directly, as by assuming an atomistic state which does this explicitly; or indirectly, as in the assumption that all individuals anticipate all changes of the factors primarily determining prices, and all effects of these changes. In the latter case the economic subjects are made independent of the inertia factors by the complete anticipations through which they are able to take account of the changes to come. But in reality there is always uncertainty about future data, and since all reactions of price formation take time, the equilibrium conditions provide because of these two reasons a definite condition for the development of the price level.

Quite *in abstracto* it is easy to say, too, what condition is set for the movement of the "price level," and I have hinted at it already. We could group all prices statistically according to their flexibility under the influence of an impulse to change. Stickiness of prices of different goods and services, and for the same goods and services in various markets, depends upon different institutional circumstances—upon law, convention, consumption habits, methods of production, patterns of marketing, price policies, monopolistic elements of all sorts, and many other circumstances—which determine the conditions of reaction for prices in different markets: Conditions relating not only to supply and demand, but also to supply price and demand price. Inasmuch as our equilibrium equations require definite price relations,

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they further require, on account of the different reaction patterns of different prices, the condition that the price level under monetary equilibrium must have that trend which permits the fulfilment of the equilibrium price relations with the least possible change of the sticky prices. Thus the stickiness of some prices sets a limit to the movement of the price level permitted under monetary equilibrium. In Wicksell's formulation the specific equilibrium condition referring to the commodity market is most logically represented by an adjustment of the flexible values of capital to the costs of production of real capital, of which the latter contains many sticky elements like wages; an adjustment to be accomplished by credit policy and particularly by use of the money rate of interest. Capital values are easy to adjust by monetary policy since they are only a market reflection of anticipations of future yields on real capital and of the rate of interest which in this theoretical model is the very instrument of monetary policy.

When we talk about sticky and flexible prices we are already thinking in terms of indices of different price levels, of which the first sets a limit to the movement of the price system under conditions of a monetary equilibrium. It would be illustrative, and certainly help toward greater clarity in our theory, if we could state more explicitly a formula for the price level which would determine the trend of price movements under a monetary equilibrium. Even if the allusion to the index idea already implied in the phrase "sticky prices" shows it to be a loose manner of speaking, problems otherwise hidden are unveiled.

This determining price level should be defined as an index in which the individual prices are weighted, first, with respect to their stickiness of reaction, and, second, with respect to their relative importance in the calculations of profitability by the entrepreneurs and conse-

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quently in the volume of real investment. But under dynamic conditions stabilization of a price level computed in this way certainly does not necessarily mean a stabilization of the general price level, nor of a price index of consumption goods.

### § 5. THE PRINCIPLES OF WEIGHTING

We shall presently comment in greater detail on the determination of the movements of absolute prices required to maintain monetary equilibrium. This determination is, as has already been demonstrated, implied in the more fundamental requirements of monetary equilibrium which we have analysed in the two preceding chapters. It can therefore be regarded as conclusively established because of its relation to the main argument of the Wicksellian theory, at least in so far as this theory is valid as an explanation or working hypothesis. The theoretical significance of this equilibrium condition lies in the fact that it makes explicit the determination of the general development of prices, which the two preceding equilibrium conditions already contain implicitly. It is, furthermore, of importance in opening up the way to a progressive and more realistic analysis of the processes of price formation. By means of further analysis of the weighting system derived from this equilibrium condition, and particularly from the first weighting principle, monetary theory is brought into touch with all the institutional circumstances which determine price formation in reality, but which are overlooked so often in abstract theory. Only by being confronted in this way with the realities of social life via the stickiness of prices can a perfection of monetary theory be expected in future.

I would like to add only the following remarks with regard to the two systems of weighting in the index formula suggested above to illustrate the theoretical idea.

The necessity of the second weighting principle is self-evident. From a theoretical standpoint, a price which is of greater importance for the profits of various firms, must obviously have greater weight than a price which is less important in this respect. *In abstracto* it can therefore be quite easily said how weighting according to this principle should be done. The partial coefficient—negative or positive—for the weight of a price with respect to a single firm is the amount of the change in the margin of profitability,  $(c'_1 - r'_1)$ , which arises from a given change of that price. For the economy as a whole, the weight appropriate to a given price is computed by multiplying each firm's partial coefficient by its investment-reaction coefficient and adding up these products. The final weight computed in this way obviously measures the importance of a change of the price with respect to the volume of real investment.<sup>1</sup>

The first weighting principle is more difficult to formulate precisely *in abstracto*. For the stickiness of prices is of different size in the long and the short period, in the different phases of the business cycle, and in respect to the various causes of change and the force of those impulses. Stickiness also changes with the content of anticipations. An account of this weighting principle therefore raises more problems than it solves. It simply marks the boundary of the sphere of institutions, where a purely theoretical systematization is no longer worth while because of the necessarily arbitrary character of the assumptions, but where a statistical study, guided by the statement of the theoretical questions raised above, has to continue.

#### § 6. COMMENTS ON THE WICKSELL-DAVIDSON CONTROVERSY

It might seem from the determination of the general

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<sup>1</sup> Cf. Ch. IV, Section 14.

price tendency in monetary equilibrium—according to the stickiness of various prices and their relative importance for the volume of real investments<sup>2</sup>—that the theoretical analysis has been shifted to quite a different level from that on which the controversy between Wicksell and Davidson moved. Judging from what has above been stated, their discussion would seem to have been oriented in a wrong direction, considering the object of the analysis as well as the theoretical criteria used.

This is doubtless the case. But a curious circumstance, which from a deeper methodical standpoint is purely accidental, causes Davidson's thesis to contain a portion of truth, although only as a theoretical approximation to a rational solution of the problem. For if we can assume that the prices of the basic factors of production are the principal sticky prices which are important for the volume of real investment—practically, this means an assumption that wages are relatively sticky prices and that they form an essential part of the cost in all kinds of production, and that the prices of finished commodities are, like capital values, highly flexible—then the implication of our third equilibrium condition is, that that money rate of interest is normal which maintains the equilibrium relations on the capital market while the prices of the means of production are unchanged. With a general increase of productivity this equilibrium condition would require a corresponding downward adjustment of the prices of finished products, exactly as Davidson always emphasized in opposition to Wicksell.

But this correspondence is only an accident from a more fundamental methodological standpoint; it is not based on any special character of the changes of produc-

<sup>2</sup> The first expression is theoretically the primary one. Only because of different degrees of stickiness of various prices is it possible for the price level to be of any theoretical importance for monetary equilibrium; and only for this reason is a weighting with respect to the relative importance from the standpoint of profitability and volume of investment necessary.

tivity. It depends simply on the assumption that wages are sticky prices. If we, on the contrary, were to assume that wages are particularly flexible while prices for finished commodities are sticky, then, when the same primary changes in productivity occurred, the equilibrium condition would, instead, require an increase of wages with constant prices for finished commodities, as Wicksell maintained. In other words, Davidson was right as against Wicksell, not for the reasons which he gave but because of certain institutional circumstances which determine the degree of resistance of different markets to external influences. But neither of the disputants brought forward this aspect of the question.

Therefore Davidson's thesis is, at best, only an approximation to a correct formulation. There are other sticky prices besides wages; indeed, the importance of administered prices in the commodity market is steadily increasing. Also, wages are not equally sticky everywhere, e.g. usually not in agriculture. In Finland, where the trade unions are weak, wages have much larger amplitudes during a business cycle than in Sweden where the unions are especially strong. Furthermore, wages do not alone determine profitability, for the cost of production does not consist solely of wages. Davidson's statement can, therefore, at best be a rule of thumb. In order that this rule of thumb be of practical use, the term would have to be clearly definable and easily measurable. In fact it is just the contrary in both respects. Our formulation, which relates directly to the stickiness of prices and their relative importance for profitability and the volume of investment, is, therefore, easier to handle from a practical statistical standpoint, quite aside from the fact that it is more general and complete; even very rough approximations to our index formula would give more correct results than the productivity formula.

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Furthermore, the productivity formula has the great disadvantage that it leads the argument so very easily into metaphysical value channels which are only too well dredged by traditional economics. Actually it is this value point of view which has really motivated the making of this formulation, although of course in a scientific analysis it is perfectly possible in theory to keep the productivity formula free of it.

### § 7. A PRICE LEVEL FORMULA CANNOT REPLACE THE MORE FUNDAMENTAL EQUILIBRIUM CONDITIONS

Before going on there is one point I should like to stress. Suppose that it is possible to calculate the actual magnitudes of the second equilibrium formula,  $R_2 = W$ , or even ascertain the underlying situation as to the profit margin,  $Q$ . We would then be able to indicate whether or not we are in an equilibrium position and, if not, on which side of equilibrium and how strong the disturbing impulses are. In other words, we should then have fully determined the situation from the monetary point of view. The fact, on the other hand, that in a certain position the less flexible prices are more or less stable, really says very little about the actual nature of the situation. It says only that the Wicksellian process in progress is not strong enough to carry the sticky prices with it. That the sticky prices are more or less stable is not particularly remarkable, for they would be thus not only in equilibrium, but also in disequilibrium—until the Wicksellian process had already been in progress for some time and gained considerable momentum. But the process might, or might not, be well under way. This is simply a characteristic of their lack of adaptability. This latest of our equilibrium conditions is, therefore, very indeterminate from this point of view. It is only a corollary of the earlier

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equilibrium formulas in a *special* aspect, and in order to yield complete determination we must rely on these earlier formulas. *The equilibrium character of a situation cannot, in other words, be characterized sufficiently by a mere study of the general price movements.*

Also, a price development cannot be characterized from a monetary point of view simply by noting how the different price levels move relatively to one another, how, for example, the "price level for consumption goods," more accurately defined by a certain weighting principle, moves in comparison with our last defined price index, weighted according to stickiness and importance for investment—let us say, for simplicity, "the cost of living" compared with "wages" (here certain assumptions must be fulfilled, of which we have spoken before). The mutual relation of these two price indices and the mutual relations of all other conceivable indices must, in order to maintain monetary equilibrium, alter in different ways according to the character of the primary changes occurring. These changes of the equilibrium relations of different price levels to each other can only be calculated with a knowledge of all the primary changes of the actual case, analysed for this purpose by means of the equilibrium formulas previously outlined. These formulas cannot be avoided in the monetary analysis of a given situation or development. That is the real reason why it is impossible, in principle, to specify monetary equilibrium merely by an expression of a price level or by the relation of price levels.

This quite negative result should be the conclusion of our analysis in this chapter. The definition of a price index whose stability is necessary for the maintenance of a monetary equilibrium serves, as I have just admitted, more to stress an open problem than to offer a solution. But at least it can save us from an exaggerated faith in the possibility of stabilizing business by stabilizing

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the so-called general price level. It has even been quite seriously proposed that monetary policy should aim at stabilizing the lightly mobile wholesale prices of the commodities traded on world markets, and this just because those prices do react so easily. In this proposal two vague and theoretically contradictory arguments have been mixed in a very hazardous manner: On the one side the idea of business stabilization, and on the other side the idea of a sensitive "barometer" of economic life.

### § 8. COMPLICATIONS INTRODUCED BY MONOPOLISTIC MARKETS

A number of further circumstances have, however, to be taken into account whenever we are concerned with monopolistic price formation.<sup>3</sup> By monopolistic price formation I mean in this connexion all the cases where the supply or demand price of a good can be held, not merely temporarily but for some time, at a level such that not the entire quantity of the good is demanded or supplied; or such that the supply or demand does not extend to an amount which in the ruling situation—with regard for the corresponding supply and demand curves—would be profitable to the suppliers or demanders if no account was taken of the reaction of demand and supply to their own actions (which would be the case under "perfect competition"). These assumptions of monopolistic action are fulfilled to a high degree in the labour market and perhaps have their significance for the majority of other markets too. The result is a disequilibrium of supply and demand, where the surplus in both quantities may, however, be only potential.

For simplicity's sake we shall think only of the labour

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<sup>3</sup> The reader interested only in the main line of argument can skip to Section 11 of this chapter.

market. If the monopolistic element is limited to the supply side alone, then the supply exceeds the demand at a given price, and this can be easily observed statistically as unemployment. If the monopolistic element is limited to the demand side alone, it cannot usually be so easily observed: the surplus demand in this case is only potential and consists in "unused capacity," either actual or potential, which is in both cases difficult to ascertain.

With bilateral monopoly on the labour market the connexion is still more complex, as is well known. Unemployment is possible, which from the labourers' point of view is supply not demanded at the wage maintained; while seen from the standpoint of the employers, there is a potential demand with respect to the same wage which does not become actual. The unemployment is then one of the results of this bilateral monopoly and it is certainly important that the complicated connexion should not be simplified too much for didactic purposes. From one standpoint, unemployment is of course a direct consequence of the monopoly of the workers, in so far as a greater amount of labour would be demanded at a lower wage. But at the same time, it is affected by the difference between the actual and potential demand of the employer, in so far as a complete realization of the potential demand for labour would increase the demand at the same wage by a part of, or by the whole, or even by more than the whole amount of labour which is now unemployed. If, in the last case, the monopoly of demand were abolished, unemployment could be eliminated even with increased wages. The existing unemployment can be taken as a direct measure, if one wishes, of the intensity of the monopolistic element on the side of the workers, which, in this case, would be a definition of the monopolistic intensity. The corresponding quantity of the monopolistic intensity on the part

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of the employers is harder to perceive, for it would have to be given as the difference between potential and actual demand for labour, and only the actual demand can be shown statistically. Monopolistic intensity in this sense is a result of the strength and the will to maintain a certain supply or demand without making price concessions, or to maintain a certain price without concessions of supply or demand, and it is measured by this difference arising out of the disequilibrium of supply and demand.

Attention should perhaps also be drawn, especially with regard to the manifestly monopolistic position of employers, to their intermediate position between the labour and commodity markets. Every monopoly of supply on the commodity market necessarily signifies a corresponding monopoly of demand on the labour market—except in so far as the decrease in the supply of commodities is compensated by an increase in inventories; a compensation in the long run impossible. A substantial part of the entrepreneur's monopoly in the labour market has this character. On the other hand, every monopoly of demand on the labour market means, conversely, a corresponding monopoly of supply on the commodity market—except in so far as the production and supply of commodities is maintained the same as they would have been had the complex of demand and supply prices been determined without the presence of an employers' monopoly. It could be maintained by substitution—complete but not justified by profitability—of other means of production for that labour potentially but not actually in demand; a substitution also in the long run impossible.

The theoretical relation between the monopoly of supply on the commodity market and the monopoly of demand on the labour market is, in other words, regulated by the rate at which stocks increase and by that rationali-

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zation of production which is not justified by profitability at present wages but is done simply with an eye to the effect on the labour market. If it is denied, and probably for good reason, that such rationalization of industry plays a big rôle, and if one can further say that increase of stocks of this character are in general unusual and even impossible in the long run, then one has directly connected the two kinds of monopoly on the part of the employers-entrepreneurs. This connexion of the two monopoly problems is implied in the nature of the matter, for the calculation of the monopoly gain must have in view the whole profit calculation, in which wages are an element of cost, and commodity prices are returns. The flexible elements—besides the prices of the total production thereby conditioned and of the total demand for means of production—are represented only by the possibilities of changing the relation of production and sales (stocks) and the relations between the various means of production (substitution).

Now among the general hypotheses of his typical formulation, Wicksell assumes, though usually not explicitly, "free competition" in a very special sense. The absence of an immediate adaptation of prices is, of course, included in the basic hypothesis, for if the flexibility of the system were assumed to be infinite, a cumulative process, which takes time, could not occur—instead there would be an avalanche. Nevertheless, the assumption of "free competition" is made. Besides implying, as we have already observed, that the natural rate,  $y_2$ , must be the same for all firms in the economy and in equilibrium, moreover, must be equal to the money rate,  $i$ ,<sup>4</sup> the assumption of "free competition" necessitates abstracting from all the monopolistic elements in price

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<sup>4</sup> The fact that this assumption is untenable leads to the essential reformulation of the first Wicksellian equilibrium condition in the previous analysis. *Vide* Ch. IV, Sections 11, 14-16.

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formation of the kind just mentioned. Wicksell's assumption, however, is important in connexion with the theoretical relations discussed in this chapter.

### § 9. THE EFFECT OF A CHANGE OF MONOPOLISTIC INTENSITY IN THE LABOUR MARKET

In order to be able to give an abstract proof, I shall make several simplifying and quite arbitrary assumptions known to be unrealistic; for I am merely trying to unveil Wicksell's theoretical mechanism. (1) Wages are the only prices which are not absolutely flexible in their reaction to changes which occur as consequences of monetary policy. Hence, from what we have said, the fulfilment of the equilibrium formulas would require an adjustment of the price system to constant wages (the assumption includes among other things the absence of inertia and time contracts as well as a particular policy with respect to all other prices). (2) Wages are the only prices in the formation of which monopolistic elements actually enter. (3) The monopoly-element is limited entirely to the supply functions. (4) The only aim of monetary policy is to maintain monetary equilibrium ( $R_2 = W$ ). (5) In the initial position there is monetary equilibrium. Furthermore, in order not to anticipate our results, we assume: (6) In the actual situation the demand and supply for labour correspond (i.e. unemployment is equal to 0 and there is no potentially profitable demand for labour unrealized). (7) In this situation the monopolistic element on the supply side becomes active. The workers organize and carry through an increase of their wages. (8) This is the only primary change.

In order that monetary equilibrium be maintained (4), all other prices must then increase in exactly the same degree as wages. If we could assume that for all rele-

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vant scales of anticipations a corresponding upward shift would directly follow the wage increase, then this upward adaptation of all prices would come about in the initial moment (1) and without a lowering of the interest rate. This assumption would not be unnatural in itself, in view of the monetary policy assumed, and of which we shall further assume full publicity and common knowledge. Unemployment would not arise in such a case.

Since the workers would not become unemployed as a result of their monopolistic wage increase, then—assuming this monopolistic tendency to persist, once begun—they would be able to raise their wages again with exactly the same results, bringing about a general and parallel upward movement of the whole price system. Because this upward impulse begins in the form of a self-generating movement caused by monopolistic activity of the sticky and therefore dominant prices a general process of rising prices accompanies it, and monetary equilibrium is continuously maintained. This process, however, would differ from the Wicksellian cumulative process in the essential fact that monetary equilibrium is maintained all the time and therefore the shifts in production, typical of the Wicksellian process, would fail to appear. The velocity of this movement of the whole price system would be determined by the velocity with which the workers increased their wages by monopolistic action.

If now we suppose on the basis of otherwise unchanged assumptions that anticipations do not react instantaneously in the manner just considered, the essential difference would be that, in order to carry through the monetary policy assumed (4), the central bank would have to ease credit to a certain extent in order to induce an upward movement in the rest of the price system corresponding to the movement in wages arising from

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the monopolistic action of the labourers. With the absolute lack of stickiness, which we have assumed on the part of all prices other than wages (1), a very small decrease of the money rate of interest for a very short period of time would suffice.

If we now consider (contrary to 7) the initiating monopoly impulse as coming exclusively from the demand side, that is from the employers instead of the workers, then a similar equilibrium process would commence although in this case in a downward direction. Unemployment would not arise in this case either, since we have now assumed " free competition " on the side of the workers in the labour market.

If, however, the primary change is a bilateral monopolistic wage policy, then monetary equilibrium would come about but with some unemployment and with a certain difference between potential and actual demand for labour, that is with a certain actual, but ultimately only potential, " underproduction." The price system would then remain stable, or would move in one direction or the other according to the relative strength of the two monopolists.

### § 10. MONETARY EQUILIBRIUM WITH DIVERGENCES BETWEEN DEMAND AND SUPPLY

Let us now assume—with the same original premises, the single primary change being the activity of the labourers' one-sided monopoly—that the scales of anticipations are not immediately adjusted upwards as in the previous case, but that nevertheless the rate of interest is not lowered. This would signify (contrary to 4) a definite deviation from the assumed monetary policy. The equilibrium conditions would no longer be fulfilled, and a downward Wicksellian process would set in, represented by a shift of the process of production towards less

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real capital construction, unemployment—because of the assumed labourers' monopoly and, later, the depressive process—and price declines first for real capital and then for consumption goods, and so on.

If now, sometime *after* the equilibrium position has been abandoned, monetary policy sets out to prevent the advance of this process (4 again) by a lowering of the interest rate, then after certain shifts of prices and production a new equilibrium could be reached in which the equilibrium formulas would again be fulfilled. In our example, in which the only primary change was assumed to be a monopolistic rise of wages, this would mean that monetary policy tried to prevent the existence of unemployment greater than that corresponding to the monopolistic intensity, that is the unemployment which workers are willing to permit without consenting to a decrease of wages. This equilibrium position would be characterized by higher (relative) wages, also by some unemployment, enough to balance the monopolistic tendency to increase wages, and by a lower interest rate—except in so far as thrift has been substantially reduced by the shifts in income and property; more generally therefore, a rate of interest which would bring about equilibrium between the altered free capital disposal and real investment, which latter would decrease if the rate of interest were unchanged. Furthermore, in this equilibrium there would be relatively lower real incomes for the capitalists; somewhat altered relative prices for real capital and consumption goods—altered among other things, with respect to the indirect demand of the various commodities for labour and capital disposition; also a somewhat different arrangement of production—different not only because of the shift in the demand for various consumption goods brought about by the shift in incomes and property, but also because of the general adaptation, through substitution, of the different productions as a

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consequence of the altered price relations within the costs of production and of the altered rate of interest. With these changes, as we have said, the equilibrium conditions would again be fulfilled.

The deviations during the dynamic process may be longer or shorter according to the adaptability of monetary policy. The longer the process has been going on, the lower will be the wages and prices at which the new monetary equilibrium will be stabilized. The shortest way would be to stabilize at once the monopolistically raised wage rate. If the unemployment, arising as a consequence of the wage rise under monetary equilibrium and more or less constant prices of consumption goods, were greater than the monopolistic conditions of labour supply would permit, then these consumption goods prices as well as the capital values would have to be increased. What is most important, however, is that, if deviations from the equilibrium conditions during the process are liquidated, then in the new equilibrium position brought about by this monetary policy, there results a fixed wage rate at which some unemployment would be a condition for equilibrium—just enough to balance the monopolistic pressure on wages. Monetary policy would have to be based upon this unemployment or else the result would be either a constant monetary equilibrium with an uninterrupted upward parallel movement of the whole price system, or a Wicksellian process which deviates from equilibrium in a downward direction.

If we now leave all other assumptions unchanged but shift the monopolistic element to the side of the employers and assume a corresponding monetary policy, then the result would be exactly the same, but, of course, with opposite signs for all magnitudes. Corresponding to the unemployment there would now be a potential, unrealized demand for labour.

If we had bilateral monopoly, the result would depend

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upon the relative strength of the two monopolists, and in the final position the equilibrium condition would require some unemployment as well as a difference between potential and actual demand for labour. The first would have to be big enough to balance the workers' monopoly, the second to balance the employer's monopoly.

### § 11. "INTERNAL" AND "EXTERNAL" CAUSES OF PRICE CHANGES

So far we have worked with quite special assumptions. Among other things we have assumed perfect flexibility of all prices except wages. But the text cannot be burdened further with theoretical casuistry. The purpose of the abstract examples chosen was simply to prepare the ground for certain general statements relating to the importance of the monopoly element for the content of the monetary equilibrium condition with regard to the general price movement. The main conclusions are the following.

When we said that under monetary equilibrium the flexible prices had to be adjusted to the sticky ones so that the equilibrium relations between different prices would hold in spite of changes, we thought only of price changes, which from the point of view of the sticky prices were due to "external" causes of change, including among these changes of anticipations. Every change of monopolistic intensity on the supply or demand side, or on both sides, for any commodity with a sticky price, represents an "internal" cause of change, which shifts the actual level of sticky prices in relation to which the price system must be adapted.<sup>5</sup> As a matter of fact,

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<sup>5</sup> The difference between "external" and "internal" causes of price changes, which, for the reasons given in the text, is of fundamental importance to the monetary side of the price movements, is dependent on a large number of quite heterogeneous institutional relationships. In this study I have had to be satisfied in the main

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monopolistic elements in price formation can be and very often are present in those very prices whose flexibility is relatively small toward " external " causes of change. The stickiness of prices is, in fact, essentially based on the same institutional relations which make monopolistic elements possible. As will presently be shown, the stickiness of a price often results from changes in degree of monopolistic pressure, in the sense that a price is maintained in spite of " external " causes of a change.

In the abstract example in which we assumed perfect flexibility of all prices except wages, a monetary policy which aimed at maintaining monetary equilibrium and keeping unemployment down at the same time, would cause an upward movement of the whole price system. If in this example we were to make the more realistic assumption that the prices of other commodities are to some extent tied by contracts and other elements of inertia or are administered prices, held constant over certain periods in spite of primary changes in the price system, then it would be impossible to keep unemployment low and to maintain monetary equilibrium at the same time, even if one would allow such an upward movement of the whole price system. Moreover, the attempt would lead to a Wicksellian cumulative process which would move upwards from monetary equilibrium. And this process could not be stopped as long as unemployment were kept below that level at which the monopoly is satisfied; it would accelerate all the more.

The existence of these monopolistic elements in price formation leads us, therefore, first of all to notice that monetary equilibrium can be maintained only along with a certain discrepancy between the supply and demand

with considering the " external " causes of change as equivalent to the interventions of monetary policy and other primary changes in price formation of the type usually dealt with in the economic equilibrium theory under assumptions of free competition. At the same time, the " internal " causes of change are represented by changes in monopolistic intensity (price policy).

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for certain goods and services. To be more specific: These discrepancies have to be just great enough to satisfy the monopolistic conditions of supply and demand. For those commodities the supply of which cannot be limited monopolistically—e.g. labour, if we take account only of the whole labour market—this disequilibrium appears directly as over-supply at given supply prices; that is, it appears as unemployment in the case of labour or as increased holding of stocks in the case of goods. For the majority of commodities this disequilibrium appears only in a difference between potential and actual supply or demand. This monopolistic price struggle and the tension between supply and demand arising from it, cannot be abolished simply by monetary policy, since one cannot assume that, in the long run, monetary policy can diminish or abolish monopoly power.

If, therefore, after a one-sided analysis of the monopoly situation on the supply side of the labour market, one proposes a monetary policy with the object of maintaining unemployment at a minimum, and perhaps even thinks that an equilibrium between supply and demand on the labour market is a practical criterion of monetary equilibrium, there is, of course, a very important element of appropriateness in it. For, during a downward Wicksellian cumulative process, because of the concurrent shift of production and the inertia of labour on the labour market and the stickiness of wages, due among other things to a temporary intensification of the supply monopoly, some part of the unemployment is connected with the monetary disequilibrium. But only a part. Another part is directly dependent on the supply monopoly and indirectly with the demand monopoly on the labour market, and consequently with the supply monopoly on the commodity market.

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### § 12. UNEMPLOYMENT AND THE ORGANIZATION OF PRIVATE CAPITALISM

This consideration is also important in judging measures, other than those of direct monetary policy, for dealing with so-called permanent unemployment other than structural unemployment. In so far as these measures—concerning supply of capital, technique, adjustments of demand, and other factors affecting the labour market—aim at increasing the demand for labour, they can be highly desirable from the workers' standpoint since the income of the working class can be increased thereby. But to the extent that the long-run monopolistic control both on the demand and on the supply side is not thereby reduced, permanent unemployment will not decrease, in so far and so long as one does not permit an upward Wicksellian cumulative process. The monopoly position simply adapts itself to a new wage situation in which the permanent unemployment may naturally be greater or less than before, depending upon the new conditions. Usually the level of unemployment must even increase, in view of the greater power of resistance against wage pressure by the employers which the working class receives from increased wage incomes.

Ideas leading to another conclusion are based upon a liberalistic attitude toward economic problems, which all too often tries to get rid of the monopoly situation between the buyers and the sellers of labour with its consequent maladjustment between total supply and potential demand, by describing within the general analysis the institutional accessories of the labour market in euphemistic, technical terms. Unemployment is then easily reduced to a mere lack of "adaptation" or a "shock phenomenon." One part of it is, however, in reality a cost, which the working class pays in its wage struggle. Another cost, of course, is the increase of the cost of living resulting from monopoly in the commodity

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market, the latter being then considered as the other side of the employers' monopoly of demand on the labour market.

Unemployment, in other words, is to some extent a necessary result of the private capitalistic organization of economic life, as it affects the labour market. This, of course, does not hinder unemployment from being reduced in the interest of both parties by mutual concessions. Imagine a thoroughgoing settlement of unemployment in the interests of both parties by agreement! This would not only presuppose that the height of wages but also that the demand for labour would be included in the negotiations on the labour market. This would further require that, with respect to their effect on the demand for labour, rationalization as well as commodity monopolies be discussed and regulated in these negotiations.

However, such an extreme industrial democracy apparently lies quite beyond present practical possibilities. Because of the monopoly elements which are present in price formation, the position of monetary equilibrium requires certain disequilibria between demand and supply, consisting generally only in differences between their actual and their potential magnitudes. For labour, however, and for other commodities the supply of which cannot be limited in a monopolistic fashion, this disequilibrium appears directly in the form of unemployment and of unsold stocks.

### § 13. CONCLUSION

This last conclusion does not invalidate our equilibrium formula relating to the price level, which states that the fulfilment of the conditions of monetary equilibrium requires the most stable possible value of a price level weighted according to the stickiness of prices and their importance for investment. For in this formulation only prices are explicitly contained and not quantities of

## THE " PRICE LEVEL "

supply or demand. A real change of the equilibrium requirement as to the commodity market is, however, brought about through the monopoly element, in so far as such a combination of prices, to be kept on a stable level, must be adjusted with regard to " internal " price changes, which are brought about by changes in monopolistic pressure (price policy). In other words, these " internal " price changes should be accepted—as well as their result on the relation of supply and demand—and prices should be held constant only after making such allowances.

In reality, however, this difficulty is not as great as it appears. For at least in the short run the changes of monopolistic pressure, i.e., acceptance of a certain change of demand or supply without making price concessions, or maintenance of a certain price in spite of supply or demand concessions, are largely connected with the " external " causes of price changes. An increased intensity of the price struggle usually arises from the fact that one wants to maintain a certain price despite changes in the market situation. The workers, e.g., in the first instance consider monetary wages, not " real wages." Similarly administered prices in the commodity markets are very often upheld in the face of shrinking demand. This means that the price remains the same, *after* and, in fact, *as a consequence* of the change in the monopolistic pressure. The change in pressure is only one of the causes of the stickiness. If all changes of monopolistic pressure were of this kind, our equilibrium formula could remain unchanged. They would be relevant only because it is just those prices with respect to which these changes are of greater importance that most strongly influence our special index of sticky prices.

Before leaving this question I should perhaps draw attention again to the fact that the stickiness of a price is not based exclusively upon the specific variability of

## MONETARY EQUILIBRIUM

the monopoly element proper or its pressure in the market. Other relevant causes in addition to price policy and imperfect competition are: Fixed price contracts, imperfect knowledge of other markets, customs and conventions maintaining prices independently of the direction of external influences, and similar influences.

## CHAPTER VII

### THE INDIFFERENCE FIELD OF MONETARY EQUILIBRIUM

#### § 1. MONETARY EQUILIBRIUM COMPATIBLE WITH DIFFERENT CREDIT CONDITIONS

In Wicksell's first equilibrium formula,  $y_2 - i = 0$ , the money rate of interest, was, as we have shown, a mere abstract representation of a mixed group of various rates of interest on the credit market and an even more variegated group of other credit conditions. That was one of the reasons why we could not rest content with Wicksell's formula but proceeded by introducing  $c$  and  $r$  into the analysis of Wicksell's first equilibrium formula.<sup>1</sup>

The fact that in reality there is not a single "rate of interest" but a heterogeneous system of credit conditions of various kinds has, however, a further result for monetary analysis. That is, it must be possible to think of various combinations of different interest rates, and of interest rates with other credit conditions, which in a given situation would have equal effect in bringing about monetary equilibrium. The determination of monetary equilibrium given in the three preceding chapters is, in other words, "indeterminate" or "indifferent" in so far as there can be certain systematic shifts of credit conditions relative to each other, within the "rate of interest"—that is, within the complex of credit conditions which in Wicksell's analysis is represented by the rate of interest—without disturbing the equilibrium formulæ.

One should note, too, the important fact that changes of all other kinds of factors influencing the price system

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<sup>1</sup> See above, Ch. IV, Section 11.

## MONETARY EQUILIBRIUM

besides credit conditions also bring about deviations from equilibrium, in so far as they are not cancelled by compensating changes of other such factors or of credit conditions themselves. Hence the "field of indifference" naturally widens even more.

From a practical standpoint it is perhaps useful to group together all those social factors, besides credit conditions, which are subject, or can be made subject, to public control. Only the factors thereby excluded should then appear as given data for the problem of monetary policy. They determine the given situation in which all the controllable factors in certain combinations with one another and with credit conditions should realize monetary equilibrium. This distinction between controllable or uncontrollable economic factors would then be the demarcation line dividing the "means of monetary policy" on the one side from all else that is relevant to price formation on the other.

This division naturally has no direct significance for monetary analysis as such, but because of the problem of monetary policy has all the more indirect significance. The line of demarcation is entirely determined by the institutional and political structure of the economy concerned at the time and is thus not fixed. In a "liberal" economy not much more than the discount rate is controllable—and not even this, under an "automatic" international gold standard. The degree of "planned economy," in the formal sense, is measured by the number and kinds of relations within the whole system of price formation which one regards as under political control. But one can never consider this control as directed only with regard to monetary equilibrium, and it is this which makes the possibilities of combination such a very serious problem from the standpoint of monetary *policy*. Of this, more in Chapter VIII. From the standpoint of monetary *analysis*, one

has only to add that, while credit conditions are represented by the "money rate of interest" in Wicksell's formula, and are generally of a character having only indirect effect upon the "natural rate," the remaining controllable economic factors have direct effect only on the "natural rate,"<sup>2</sup> not on the "money rate."

In admitting the possibility of different combinations with regard to which the conditions of monetary equilibrium are "indifferent" within a large field, one is not yet, however, outside the realm of the equilibrium concept. On the contrary, these combination problems can be discussed only in the framework of the equilibrium concept. The combinations are determined by an analysis of how they affect the profit margin in different industries, and hence the direction of the production process, incomes, saving and the resulting relation between investment and free waiting in the capital market. The "normal rate of interest" in Wicksell is only an imperfect formulation of the monetary equilibrium idea. The formulation can be improved but the idea itself cannot be avoided if one really wishes to use Wicksell's schema.

## § 2. THE INEFFECTIVENESS OF THE DISCOUNT RATE

The problem of the indifference field of monetary equilibrium cannot be dealt with here in all its details, although it is of the highest importance for the further development of monetary theory and especially important for the discussion of monetary policy. We shall discuss the special question known as the Ineffectiveness of the Discount Rate only as an example, and because of its reality at the present time.

Even if we should assume (1) that all economic factors, except credit conditions, are out of reach of political

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<sup>2</sup> By means of the effect on the exchange relations.

control, and, further, (2) that no credit conditions are variable, except the rates of interest, there would still be a large field of indifference in our problem. The rates of interest differ for a number of reasons, among them the time period implied. Since in the calculations of the entrepreneurs the rates of interest referring to different periods in future are of importance, different combinations of future interest developments, represented in these various interest rates at the moment, would all result in a monetary equilibrium in a given situation. It is part of the monetary equilibrium problem that the different equilibrium positions reached by such different combinations would lead to different developments of the economic system as a whole, even if equilibrium should supposedly be maintained during these future developments.

This discount rate is primarily important in fixing some of the interest rates actually existing on the credit market. The Central Bank can also influence the height of other interest rates by means other than the discount rate. It is then obvious that the Central Bank can bring about or maintain a certain set of values of the quantities in the equilibrium relations by means of a great variety of discount rates. To be sure, it can do so only if those interest rates not directly influenced by the discount rate are adjusted by other means in a way necessary to bring about this particular result in the existing situation.

We have here a simple and typical example of a monetary indifference region, dependent upon certain shifts *within* the "money rate of interest" which to some extent are mutually compensating.

However, the question of the ineffectiveness of the discount rate relates under actual conditions<sup>3</sup> to something quite different. For simplicity we shall assume

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<sup>3</sup> Spring 1932.

(3) that the long-term rates of interest are subject only to indirect control from the Central Bank by its fixing of the discount rate. To make it clear that we are not concerned with the indifference field within the rate of interest, we shall expressly assume that all the credit conditions are fixed relative to one another in a "Standard Combination,"<sup>4</sup> and that they can only be changed together in one direction or the other. The question then is, to what degree and under what conditions does a tightening or easing of credit conditions in general leave the monetary equilibrium of a price situation undisturbed. As usual we are here concerned with a closed economy, such as the world as a whole may be considered to be.

Let us consider a case where credit conditions are made more stringent, and let us suppose for simplicity that the initial position is one of monetary equilibrium ( $R_2 = W = S + D$ ). The course of the argument is then as follows. Through the tightening of credit conditions the capital values of real capital are depressed in comparison with their production costs. The resulting fall of the profit margin causes the entrepreneurs to reduce their real investment somewhat. Incomes in general are then depressed, first in the capital goods industries, then in the consumption goods industries; the demand for consumption goods then declines, a further pressure on all capital values is released, and so on, according to the general schema of the Wicksellian process, as it was sketched in Chapter II above.

The whole process derives its special character from the fact that the institutional circumstances are such that there is an important resistance to a fall in certain prices, especially wages. To begin with, the collective contracts run for a comparatively long period, which naturally makes the sensitiveness—e.g., variability within the busi-

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<sup>4</sup> For more detailed consideration of this, see Ch. VIII, Sections 4-6.

ness cycle—of wages small, and even at the expiration of the contracts the workers strenuously resist reduction in money wages. Experience indicates that whichever party on the labour market finds himself on the defensive fights most obstinately. Thus, in other words, the monopolistic pressure of the workers grows if a reduction in money-wages is threatened. That is only another way of saying that the workers are ready to put up with greater unemployment than before. As the wage reduction cannot then, in any case, be as great as would be required for unchanged unemployment, the latter increases, production is restricted, and the total money income of the economy falls in greater proportion than that corresponding to the reduction in rates of wages.

### § 3. THE MONETARY DEMAND FOR CONSUMPTION GOODS DURING A DEPRESSION

So far the inner mechanics of the depressive process are fairly clear. However, it must now be noted that the total purchasing power of the society, which forms the demand for consumption goods, shrinks significantly less than does the total income. This means, naturally, that total saving is reduced, not only because of the reduction in incomes but also on account of the smaller fraction saved. The political and institutional development of the economy of the countries in an advanced capitalistic stage tends continuously to increase the importance of these shifts in the use of income during a depressive process.

This tendency may be partially explained by the following considerations. The unemployed workers must live and in view of the ever-growing importance of social ideals, they must not live too badly. The public authority takes its part in several ways. Whether it be that the cost of the care of the unemployed is covered

by public loans or by another turn of the tax screw, in so far as this affects saving, in either case it brings about a reduction in total savings,  $S$ , and thus also in the free capital disposal,  $W$ , available for real investment, compared to the level they would have had if the dole had not been paid. If the assistance should instead take the form of work relief to some extent, then total real investment,  $R_2$ , on the other side of the equilibrium formula, could equally well be said to have increased. The public works activity should thus be an independent variable in the problem in so far as the real investment in which it finds expression is free from the influence represented by a shift in the profit margin analysed in Wicksell's first equilibrium formula. Or one could even speak of a politically determined "negative investment elasticity." But perhaps it is better to keep relief works out of the investment category and to let this spending mean merely decreased saving. The unemployed also live on their own past savings and those of their relatives, which likewise reduces the quantity  $W$ .

Corresponding reasoning holds for the other classes of society. In order not to spoil the chances for raising capital in the future and also on other grounds, industrial firms in general try to keep up their dividend payments, despite the fall in actual earned net income, by entrenching upon reserve funds or anticipating future income. By means of all kinds of bookkeeping transactions, which are not always within the law nor the realm of what business men consider proper—which, however, is not relevant in this connexion—they often try to obscure the fact that they are paying out capital and not just income. Naturally, in so far as they are successful, the amount of income which the coupon-clipping income receivers consider they have free to devote either to consumption or savings remains unchanged. These tendencies toward a stabilization of dividend incomes

over a business cycle, which in less extreme forms are even proposed as deliberate distribution policy, should not be under-estimated in their significance in this connexion. Their effect is almost equivalent to that of the public labour policy.

Further, all kinds of higher employees with commercial or technical positions often stand in such relations to their firms that their salaries cannot readily be reduced and they cannot, in any case, be immediately dismissed. Public officials have an even more secure position in respect to their employment and salaries. All this naturally tends to keep the total money incomes of these social groups up to their old levels.

Even aside from this, the consuming habits of the middle and upper classes are fairly stabilized and resist considerably any change, especially a reduction, of their standards of living. This is quite natural, both in view of the greater feeling of economic security of these social classes depending on their capital and their credit possibilities, and in view of their greater adherence to social conventions (a very important part of their consumption is, notoriously, of a "social" character, that is it is based on matters of prestige) and also in view of the relative fixity of the technical, material framework of their consumption (houses and other expensive and durable consumers' goods, personal servants). To deal only with the first point now, it is these classes above all, which are able to save, and which can now reduce their saving considerably or even live on their capital if their incomes fall. They will certainly want something from their highly praised saving. The bourgeois rationalization of saving, even its motive, is said to be that one wants to have something to live on in bad times.

All this brings about a fall in *W*.

#### § 4. THE RESISTANCE OF MONETARY EQUILIBRIUM TO A CHANGE OF CREDIT CONDITIONS

These factors are naturally of very different strength in different countries. They are less important, on the one hand, in undeveloped and backward countries and countries very much dependent on the external world, and, on the other, in America where the capitalistic structure has hitherto been developing along a very liberalistic line. The growing volume of state interference and social legislation is everywhere increasing the importance of these factors from year to year. Quite generally the relatively fixed consuming habits and the stability of the total monetary demand for consumption goods are forces tending to a restoration of the relation  $R_2 = W = S + D$ , when this relation has been disturbed by a shrinking of  $R_2$  caused by a diminished profit margin, due in the present example to a tightening of credit conditions.

So much for the tendencies on the capital market. Let us then consider the relations on the consumption goods market. Here the maintenance of money consumption demand naturally has the effect of sustaining the prices of consumption goods. These remain higher than they would if consumption habits were less fixed, i.e., if the consumption demand fell in proportion to the reduction of incomes.

Now it is the very fall in the prices of consumption goods which gives the Wicksellian process its progressive and cumulative character. For in the exposition of this process it is assumed that the fall in prices of consumption goods depresses the entrepreneurs' anticipated future income. Because of this relation between consumption goods prices and capital values, the fixed consuming habits hinder a fall of these values, and, as the relative height of capital values compared with the construction costs of real capital regulates the profit margin and

## MONETARY EQUILIBRIUM

thereby real investment,  $R_2$  in our formula for the capital market is held up more than otherwise would be the case. Thus the fixed consuming habits have an effect tending to maintain monetary equilibrium despite the tightening of credit conditions (increasing of  $i$ ).

It should further be noticed that a general restriction of production would have taken place. This restriction is mainly important for the capital goods industries, to be sure, and thus implies only a smaller restriction of the supply of consumption goods. For certain goods the supply may even increase at first, as stocks are thrown on the market and the production process is shortened in time. But to the extent to which the old real capital wears out, the restriction of production naturally brings about gradually an ever greater relative restriction of the supply of consumption goods. This works in the same direction as the fixity of consumption, that is, toward maintaining the price level of consumption goods. But, as has already been stressed, it is just the fall in consumption goods prices which gives the Wicksellian process the momentum of continuous advance. If the consumption goods prices do not fall, the process will not be cumulative but must stop.

### § 5. CONSUMPTION AND THE ELASTICITY OF REAL INVESTMENT

So far it has been a question of tendencies only. Positively, however, I would assert the following: If the forces maintaining consumption are strong enough and if the reaction of total real investment to a shrinking profit margin is relatively small, then the effects of the credit policy will be neutralized.

These two conditions will be fulfilled to a greater degree the more the tightening of credit is considered temporary by the entrepreneurs. Also, the influence of

the State to-day is ever more determinedly directed to maintaining consumption purchasing power through social policy, and to reducing the elasticity of total real investment by the size and timing of public works activity. Naturally, there is a difference here between considerations of short and longer periods. If one considers more than one or two years, then consuming habits are not so fixed, while the elasticity of real investment perhaps increases—except in so far as a technical development intervenes, as often happens, to considerably reduce the value of real capital, thus making it obsolete and thereby making profitable the maintenance of real investment in the long period despite the originally diminished profit margin. But, on the other hand, the supply of consumption goods falls off even further in the long period.

Thus after a credit contraction the business situation can under certain conditions attain quite a fair stability, at least stability for a considerable time, so that the relations fulfil even the equilibrium criterion,  $W = R_2$ . The new equilibrium position would be characterized by the following: A largely unchanged price level for consumption goods; capital values which will be sufficiently lower to correspond to the higher interest rate, or more generally, to the tighter credit conditions; somewhat lower wages, particularly in the capital goods industries; some, perhaps quite considerable, unemployment, especially in the capital goods industries; a production volume restricted generally but particularly in the capital goods industries, implying a shorter time structure of production; saving sufficiently reduced to make free capital disposal correspond to real investment, which, according to what has been said, is restricted on the whole and has a less roundabout arrangement of production to maintain.

## § 6. THE CASE OF A NON-ISOLATED ECONOMY

Of course this is only an abstract example. But in the same way it can be proved that credit policy, under quite conceivable and in fact ever more probable assumptions respecting consumption habits, can be quite ineffective in maintaining the equilibrium relations if they are disturbed by primary changes. Credit policy is, however, not without effects on social conditions, including the amount of production, its arrangement, the degree of employment, and capital values, under which monetary equilibrium is maintained or not maintained. These effects are perhaps more important to emphasize than the ineffectiveness of the discount rate in regard to the indifference field of monetary equilibrium. In order to illustrate better this second side of the problem I will modify my abstract example just a little. The argument will then follow quite closely circumstances which at the present time (Spring 1932) to some extent are true of a number of countries, among them my own.<sup>5</sup>

Let us consider a country that is not isolated, but connected to other countries, though only by means of trade in commodities, both long-term lending and borrowing as well as the more important short-term capital movements being excluded. The international trade of this country with other countries is thus settled by cash payments or very short-term credits; the Central Bank neutralizes daily and weekly fluctuations in the international balance of payments by dealing in foreign exchange. This neutralization of fluctuations in the balance of payments through short commodity credits and the short-term trade in foreign exchange represents the sole existing form of international capital movement. We assume that this country, as well as the outside world,

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<sup>5</sup> The remaining sections of this chapter can be skipped by a reader interested only in the principal argument.

has been experiencing a downward Wicksellian process. The acceleration of the process, however, has been stopped by various factors that I have mentioned above, which serve to maintain consumption. The Central Bank is supposed to foresee a persistent fall of the exchange-value of its currency—on account of the intensity of the depression in the outside world and the changes in the international terms of trade which result directly or indirectly—and wishes for some reason or other, which lies outside our discussion, to prevent this depreciation of its exchange rate. Or, the Central Bank may believe that it can maintain the ruling exchange rate but wishes for some reason or other to appreciate its currency. The Bank considers the possibility of accomplishing this purpose by means of credit policy.

As the international capital movements are, according to our assumptions, outside any control by the credit policy of the Central Bank, *this policy must affect international trade in order to influence the exchange situation.* In order to simplify the case still more, we shall assume further that, because of special conditions on the foreign markets for this country's goods, the export volume at the prevailing exchange rate can only be increased by means of a very considerable fall in export prices. Finally, we shall suppose that, because of the profit conditions of the export industries, their prices have already been so far depressed that at the given exchange rate they are comparatively insensitive to any effect of credit policy. We shall not pause further to see what this assumption really means but simply postulate it. There remains to be studied then only the effects of credit policy upon imports. At first we shall suppose that the stocks of imports on hand are not so large that considerable changes in the volume of imports in the long run are to be expected from a credit policy

which has as its goal a change in the holding of stocks within the country.

#### § 7. THE SENSITIVITY OF CONSUMPTION GOODS IMPORTS TO A RESTRICTIVE CREDIT POLICY

Under these assumptions, which far from being nonsense are on the contrary at present rather realistic, the tightening of credit with the purpose of influencing the exchange rate can only aim directly at depressing the volume of imports. In other words, the credit policy must be intended as an indirect barrier to imports. No other function could be proposed for a credit policy with the objective of supporting the exchange-value of the currency under the conditions assumed. And under such assumptions it is hardly conceivable that the restrictive credit policy is desirable from the point of view of the domestic situation. However, this we do not need to discuss here: Just now we are investigating only the effects of the policy upon the foreign exchanges.

Assume now at first that the imports consist exclusively of consumers' goods, or of materials used directly in the consumers' goods industries. The intention of the credit policy must then be, by means of a deepening of the depression in this country, to reduce production, employment and hence also income so far that *because of this* the consumers' demand for *all* goods (including domestic) declines so much that the part of the shrinkage which falls on imported goods is large enough to achieve the desired effect on the balance of payments. This is the reason why the credit policy was described above as an indirect barrier to imports, for the same result upon the balance of payments and thereby on the exchange rate could naturally have been reached by means of a direct import barrier of some kind or other. In so far as domestic goods were in competition as sub-

stitutes for the imported goods, use of a direct import barrier instead of credit restriction would have actually increased, instead of decreased, domestic production, employment, incomes, &c.; that is, the depression would have been mitigated instead of increased.

We return however to our assumptions. The efficacy of the credit policy would then be determined by the plasticity of consumers' demand in the face of the depressing forces released by tighter credit conditions. If incomes and consumption habits were both maintained due to the factors analysed above, then the consumption of imports naturally would not fall. The only effect of the credit pressure would then be reduced production and employment; prices—aside from capital values—might stay about the same, and imports as well. This is even more likely if the imported goods are necessities or other consumers' goods of inelastic demand.

It might, therefore, very well happen, that one could achieve almost the same result in regard to the exchange situation and also the prices for consumers' goods with widely different credit policies. There would, however, be this significant difference, that a given result, if achieved by a smaller pressure on credit, would go together with a larger volume of production, and also with a more roundabout arrangement of production, and a more complete employment, especially in capital goods production. One might then say that the credit policy is ineffective with respect to its objective, when the objective relates only to such formal things as the exchange rate and the price level. At the same time real investment, varying with the severity of the credit policy, may very well move parallel to the changes in saving and free capital disposal, which is to say, the general business position remains the same from the restricted standpoint of monetary equilibrium.

There is only one thing to add. If, contrary to our

original assumptions, there are unusually large stocks of imported or domestic goods on hand in this country, which can be substituted for import goods, then the credit policy can be effective *temporarily*, if it succeeds in reducing the quantity of these stocks.

## § 8. THE SENSITIVITY OF PRODUCTION GOODS IMPORTS

So far we have assumed that the imports consist simply of consumption goods, or raw materials, or semi-finished goods for the domestic consumption goods industries. Let us now suppose that the imports consist substantially of goods used in the domestic capital goods industries. The credit policy is then naturally more effective on the exchange situation.

The intention of the credit policy is then to depress the capital goods industries in order to reduce their volume of production and thereby their need for foreign materials. This result can really be achieved in this way. For assume that the fixity of incomes and consumption habits sets up some resistance and actually causes the situation from the standpoint of monetary equilibrium to be about the same as before, even after the tightening of credit. Nevertheless, this new situation will have an altered arrangement of production, which will result in a decreased capital production and therefore, too, a smaller demand both for foreign and domestic production materials. In this case, also, the same result could have been attained by a direct barrier to imports, and if domestic materials could be substituted for foreign ones, the result could have been reached with a substantially greater volume of production and with a mitigation of the depression.

Until now we have assumed throughout that the volume of exports lay outside the control of credit policy. We shall drop this assumption here and suppose that the

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volume of exports could really be increased substantially by a fall in export prices. The question then is, how far can credit pressure accomplish this.

If there are considerable stocks of export goods on hand, the credit policy can achieve a temporary relief of the exchange situation, by mobilizing these stocks in the balance of trade. But the exports can be permanently stimulated only by a lowering of production costs in the export industries. This may, however, be quite difficult if wages and other cost elements are rather inflexible. It is thus quite possible that even in this respect the credit policy will be without much effect on the exchange situation.

Finally, I should like to emphasize once more what is really obvious, that, in brief, *all public intervention* directed against the social effects of the depressive process must impede the efficacy of the credit policy, if the latter is concerned with intensifying the depression for some purpose or other. As I have already stressed, the purpose of the credit policy in the example just treated is to intensify the depression (in consideration of the exchange position). If then other public bodies at the same time do everything they can to moderate the effects on income and consumption, we have the typical disintegration of political relations which generally characterizes most of the public activity of present capitalist societies. It is the "planlessness" which is the bitter inheritance of the liberal automatism, after this automatism itself has been everywhere replaced by state and group control, which has not yet been centralized.

### § 9. THE EFFECTIVENESS OF CREDIT POLICY

There are certain general inferences to be drawn from the broad indifference regions, illustrated by the examples discussed above. First, it is wrong to conclude from

the supposition of a fairly stable situation on the capital market, or from relatively stable price or exchange relations, that just the credit policy, discount rates and credit restrictions exist, or have existed, which are necessary to maintain monetary equilibrium. For it is possible, and, in times of crisis like the present, even probable, that monetary equilibrium would be maintained either by a substantially more or a substantially less severe credit pressure—and, to be sure, with a larger or smaller volume of production and employment and a more or less strained social policy. One is naturally guilty of a still more dangerous error if, from the same assumptions, one draws the conclusion that in credit policy we have actually a means at hand with which we can practically and effectively control and stabilize the given situation. If it is actually stabilized for a certain period, that is the result of a very complicated system of causes, and the ability of the credit policy to attain the same result with important shifts among the other causes is certainly not proved by this stability.

The worst mistake of all would, of course, arise if one saw in such a situation a proof of the efficacy of the rate of discount in particular. The Central Bank might be able to maintain a very low or a very high rate of discount at will, and in either case attain equality in the relation between the volume of real investment and free capital disposal. Nevertheless, the shift within the "rate of interest" of Wicksellian theory is not without importance, not only for the profitability of the banks, but also for the direction of the credit stream and real investment, and, in general, for the distribution of incomes in the society.

## CHAPTER VIII

### MONETARY EQUILIBRIUM AS A NORM

#### § 1. PROPOSED NORMS

Up to this point our exposition has been concerned only with theoretical relations. If at times we have spoken of certain monetary policies, they have been stated only as abstract and hypothetical premises of a factual character in a purely theoretical argument. In other words, the idea of monetary equilibrium has only been studied in its capacity as a tool in the theoretical analysis of causal or final connexions. In doing so we have found that it was fundamental to the whole method of monetary analysis which Wicksell introduced. We strove then to make the concept of monetary equilibrium more precise and to clarify as far as possible its relations to the general problem of monetary theory and to the task of statistical observations of actual reality.

However, as I indicated in the Introduction, the notion of monetary equilibrium has played another rôle in monetary doctrine, in addition to serving as a theoretical instrument. It has been set up as a norm for monetary policy.

It certainly appears thus in Wicksell. In the more abstract arguments, the correspondence of the money interest rate with the "natural rate" is set up as the norm. In the practical arguments it is the stability of the "price level" which is used as norm, though certainly motivated by the principal norm first mentioned. As we have already noted, Davidson drew attention to the possibility of a theoretical contradiction between these two equilibrium conditions; in accordance with

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Wicksell's fundamental equilibrium formula of the "natural rate," he claimed that, when there were changes in productivity, the "price level" of finished products ought to be adjusted upwards and downwards in proportion to the fall or rise of productivity. Thereby the "value of money"—defined by Davidson on the basis of the production cost analysis of the classical value doctrine—would be held constant, which, according to Davidson, also satisfied the requirements of justice in the distribution of income.

### § 2. MITIGATION OF BUSINESS FLUCTUATIONS AS THE MAIN OBJECTIVE

Behind these and similar general postulates of monetary policy there lie a number of very incongruent normative ideas. The decisively important objective in the setting up of monetary equilibrium as a norm for monetary policy is, however, the *desire to eliminate completely or at least to mitigate the "business cycle."*

This tendency to interrelate the analytical tool of monetary theory, monetary equilibrium, and the ideal of monetary policy, elimination of the business cycle, is quite natural. The Wicksellian cumulative process—which comes about because of a deviation from monetary equilibrium—obviously has the characteristics of certain phases of the business cycle, as we know it from experience. Particularly if one couples this monetary theory to the quantity of gold or another factor determining the volume of means of payment, as Wicksell did, and so constructs two somewhat elastic limits for the artificial creation or destruction of credit, then one can theorize about the whole business cycle problem within this monetary schema; and one can thereby make the monetary schema more realistic by incorporating a number of observations taken directly from the empirical study of business cycles. This question will not be further dis-

cussed here. I shall content myself with drawing attention again to the fact that the Wicksellian monetary theory, considered from this point of view, contains a complete business cycle theory in a nutshell, which at least in this respect—but only in this respect—is of the “monetary type,” for it stresses certain monetary relationships and events which unquestionably have an effect upon the course of the cycle and which can be politically controlled through the banking system as instrumental medium.

It was, indeed, quite natural that the elimination or diminution of the fluctuations of the business cycle should have been the primary objective underlying the adoption of a norm for monetary policy. Furthermore, it was quite natural, with this purpose in view, that the maintenance of monetary equilibrium should become the expression of the norm of monetary policy. The Wicksellian cumulative process is accompanied in its course by a change in nearly all relations of price formation, but the primary one in the causal succession of Wicksell's theory is the profit margin—the relation between the “money rate of interest” and the “natural rate of interest”—determining the relation in the capital market between investment and free waiting. Only if and in so far as this specific monetary equilibrium condition is not fulfilled, does the cumulative process go on. As I have often emphasized above, it is just because of the cumulative character of the process that it is so important to stop it as soon as possible, to prevent the powerful reactions, the “repercussions,” which are later brought on by the severe measures that then become necessary. The cyclical process ought to be nipped in the bud, before it gets under way. It is best to interfere as soon as a divergence from equilibrium shows up in the relations which have a causally primary place in the

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process, that is, in the equilibrium conditions themselves.<sup>1</sup> The norm for monetary policy would then be simply the continued maintenance of the conditions of monetary equilibrium.

### § 3. PREMISES FOR THE ANALYSIS OF THE OBJECTIVES OF MONETARY POLICY

However, one must note here that from various stand-points it may be questioned—and, as is well known, it actually is questioned—whether and to what degree there is really a general, undisputed advantage in eliminating business cycles. I will not pause here over this point, but for the sake of argument I will postulate that the elimination of the cycle is really in the general interest.

Now actually the economic process is of so complicated a nature that a complete elimination of business cycles cannot be achieved merely by the continuous fulfilment of the monetary equilibrium conditions. In the preceding chapter I touched upon the question of monetary indifference regions. Without going into the full range of the problem again, I would only like to recall that it is quite possible for a relatively complete cycle—with the characteristic movements of prices, of the volume and direction of production, of employment, wages and similar factors—to take place under a constantly maintained monetary equilibrium, during which  $R_2$  and  $W$  certainly would change, too, but remain

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<sup>1</sup> Even earlier in the causal chain, of course, are the changes which themselves have brought about the deviation from the equilibrium conditions (for example, technical inventions, changes in anticipations, in incomes, in saving, and so on). But the gist of the Wicksellian theory is simply that, despite these changes, the process could be prevented from running its course if only the "money rate" were continuously adjusted to the changed situation, which in our terminology would mean, if the profit margins were adjusted so as to keep  $R$  equal to  $W$ . Naturally there would then be changes in price relations, production, and consumption, and even, as Davidson has already pointed out, in the price level of consumers' goods.

equal.<sup>2</sup> This does not destroy the significance of a study of these very relations, and especially of the synchronized movements of the various quantities included in these relations, for the theoretical analysis of such an equilibrium process. It only means that maintaining monetary equilibrium does not necessarily mean eliminating business cycles.

However, there is hardly a doubt that most cycles actually develop in connexion with some deviations from monetary equilibrium, and derive their large amplitude from this.<sup>3</sup> Therefore, even if the business cycle cannot be completely eliminated simply by a monetary policy which succeeds in maintaining monetary equilibrium, the desire to make the cycle less severe may nevertheless justify such a policy. This would then be the first step, so to speak, towards getting rid of the scourge of the cycle—and possibly the only step which one would be ready to propose if the remaining cyclical movements were not considered undesirable.<sup>4</sup>

Let that be as it may. In what follows we shall proceed upon the *value premise* that cyclical movements should be made less severe and the *factual premise* that this requires primarily the maintenance of the conditions of monetary equilibrium.

#### § 4. IMPORTANCE OF THE INDIFFERENCE FIELD

Then we face immediately the following difficulty which cannot be neglected. Even when it is accepted without argument, as it is here, the norm is in many

<sup>2</sup> See an abstract example, Ch. VII, Sections 2-9.

<sup>3</sup> This was also Wicksell's opinion. He was not among those who wished to reduce business cycles to purely monetary phenomena, which might have been suggested by the monetary theory which he built up. The monetary and credit relations only give the cycles their acumination, as he always emphasized.

<sup>4</sup> Cf. Wicksell, *Vorlesungen*, I, II, p. 198 [Vol. II, p. 174].

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respects indeterminate, precisely as a norm, for in practice it admits of various solutions.

The indifference field of monetary equilibrium, discussed in the last chapter, becomes of importance here: Monetary equilibrium can be attained by quite different combinations of credit conditions. Further, these different combinations are not politically indifferent but necessarily signify a discrimination between various types of demand for credit. Now, as the existing conditions in society make different kinds of credit demands of varying importance to the different branches of the economy, and also, within these branches, to the large and small entrepreneurs, the more and the less capitalistic, and the members of all the other categories, therefore, various social groups would be interested in the different combinations of credit conditions. In other words, they would be interested in different regulations of the individual parts of the complex, "rate of interest," by means of which profit margins, appropriate to the balance in the capital market, are maintained, which is the only purpose assumed.

This situation would perhaps not be so important in itself during the relatively quiet period which would certainly follow a monetary policy of maintaining monetary equilibrium, as long as one could assume at the same time a liberal industrial policy, which at least did not attempt to direct capital into certain channels of economic life by means of credit discrimination. Under such circumstances there would arise a certain, and in many respects conventional, "standard combination" of interest rates and other credit conditions, the relation between which would be more or less fixed. Within this standard combination, the internal relations of the component parts could naturally vary along with a changing general value of  $i$ , provided only that there were a fixed rule for this variation.

## MONETARY EQUILIBRIUM AS A NORM

The organization of the credit markets in the decades before the War was perhaps not far from this ideal model, although at least the international market for long-term credit and the relation of this market to other credit markets was not quite beyond the reach of certain imperialistic considerations and influences, which makes such a standard combination a slightly false picture of reality even for that period. The assumption of a fixed standard combination of credit conditions as an institutional fact would very greatly reduce the region of theoretically indifferent positions, and would be important from a practical point of view.

However, in the last chapter we have also shown that a uniform loosening or tightening of the whole standard combination of credit conditions often need not lead to a Wicksellian cumulative process or to a change in the intensity of such a process already under way; at least it need not do this immediately. Therefore, even if reciprocal changes within the complex of the term are excluded by the assumption of a standard combination, the norm of monetary policy here discussed leaves room for some discrimination. This is not without political importance, since two credit situations of differing degrees of "easiness" in both of which the monetary equilibrium relations are in balance, would have different effects, particularly upon the distribution of income and wealth.

### § 5. MONETARY POLICY AND ECONOMIC POLICY IN GENERAL

So far we have kept the tacit assumption of *ceteris paribus* for all controllable things outside of the "money interest rate," that is, outside of credit conditions. The internal changes within the complex are, however, of relatively little importance compared to the consequences for monetary analysis that appear when this

abstract assumption is dropped. For, if one acknowledges that all other controllable circumstances of social life, as well as the manner of their regulation, likewise influence the monetary equilibrium relations, then, as we have seen in the last chapter, the field of indifference widens greatly and thereby increases the "indeterminateness" of the equilibrium criterion as a standard of actual monetary policy. Maintaining a monetary equilibrium becomes a question not only of monetary policy but of economic policy as a whole, social policy and the institutions which rule the labour market, cartel legislation and all related factors. Various combinations of these heterogeneous things, more or less under political control, together with appropriate values of the standard combination of credit conditions, produce stable monetary equilibrium relations.

Therefore, it is in principle impossible to keep the consideration of monetary policy on an objective and technical plane, as long as one postulates solely a general norm, like the elimination of the business cycle. For this norm can be reached by several routes, in which all sorts of social and economic problems are given different solutions, and in which the credit screw must be applied more or less severely. In these questions of economic, social and financial policy, the regulations cannot be thought of as fixed in a more or less conventional "standard combination," equivalent to that to which we attributed a special validity over considerable periods, in the case of credit conditions. On the contrary, these political regulations belong to the factors which, in a scientific analysis of the monetary problem, must be considered variables. They are certainly not given data of the problem but, rather, about them turns the political struggle in every country. Scientific discussion must, therefore, make allowance for those political elements in the problem, even if only in the

form of alternative hypotheses, if it wishes to claim any validity and practical interest.

The problem of monetary policy cannot possibly be isolated, because a different arrangement of all these factors must give rise to a different monetary policy even under a given general norm; or, in other words, these must invest a given norm with a different real content. Different social groups have thus quite different interests respecting the *method and content* of a monetary policy, aimed at business stability, even if one assumes that this can itself be regarded as an aim common to all. If for long periods in the past this has not been more noticeable in political campaigns, it is mainly because monetary policy (in the narrow sense) was bound up with the international gold standard, which was left to function automatically, or in any case deemed to be outside the realm of rational control. But immediately the problem of monetary policy is really taken up for discussion—even if, as before the crisis, the discussion is confined to the question of how an international gold standard can be regulated with the object of eliminating the cycle—the problem of the connexion between monetary policy and all other economic policy necessarily becomes important.

## § 6. THE “ ISOLATION ” OF MONETARY POLICY

However, in an economy in which a socialistic centralization of all economic policy has not yet been carried through, an “ isolation ” of monetary policy from other economic policy exists as an institutional fact. Even so, the connexion is naturally of theoretical importance when one is discussing the effects of various combinations of monetary and other economic policies. From the viewpoint of monetary policy, however, matters are simpler, in so far as all other economic policies, together with

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all the primary changes, represent independent variables to which the Central Bank must adapt itself in pursuing its aims, whatever these may be.<sup>5</sup>

In order not to be too vague and general in my reasoning, I will prepare the analysis of this institutionally "isolated" monetary policy by a simple theoretical experiment. In doing so, I will remind the reader that the general equilibrium formula relates to the capital market and is expressed by the condition that  $R_2 = W$ . Wicksell's first equilibrium formula relating to productivity was found to have no meaning other than that of a more penetrating analysis of the causal factors explaining how and why the relation between  $R_2$  and  $W$  comes to be or not to be in equilibrium. The condition for equilibrium on the capital market was then related to the general profit margin, which in its turn was defined as an aggregate expression for the profit margins  $(c_1 - r_1)$  within single firms, using as weights the coefficient of investment-reaction for the relevant firms with respect to the profit margins concerned  $\Sigma_w (c_1 - r_1)$ . To simplify the exposition I will use, somewhat incorrectly, the expressions  $C_1$  and  $R_1$  to stand for the sums of capital values and costs of construction of real capital, respectively, which one would obtain if one did not simply add  $c_1'$ ,  $c_1''$ ,  $c_1'''$ , &c., and  $r_1'$ ,  $r_1''$ ,  $r_1'''$ , &c., but added them with the reaction coefficients as weights, whereby  $(C_1 - R_1)$  would  $= \Sigma_w (c_1 - r_1)$ . We leave it open what value  $(C_1 - R_1)$  should correspond to  $R_2 = W$ ; it is not necessarily zero.<sup>6</sup>

We assume monetary equilibrium ( $R_2 = W$ ). For some reason or other  $R_1$ , the cost of production of real

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<sup>5</sup> This isolation, of course, only partially corresponds to reality. In so far as the policy of the Central Bank is incorporated in a more general economic policy or, on the contrary, has influence on the financial policy, the trade policy, and related matters, it is not true. The actual development since the original appearance of the present essay has in most countries continually worked in the direction of making the isolation premise less and less realistic.

<sup>6</sup> See above, Ch. IV, Sections 14-16.

capital, increases (for example, on account of a stronger monopolistic element in the labour supply, or a weaker monopolistic element in the demand for labour, or because of legislation concerning shorter hours, safety measures, further social insurance, or anything at all; the causes lie outside the present problem).

The equilibrium condition  $R_2 = W$  can then obviously be maintained by measures which, besides other effects must, either (1) increase  $C_1$  by as much as  $R_1$  is increased, or (2) reduce  $R_1$  to its old value, or (3) bring about a movement of  $C_1$  as well as  $R_1$ , which may be of any kind as long as it brings the two quantities to such a relation that once more  $R_2 = W$ . The number of alternatives open illustrates one side of the indifference region formerly discussed. However one proceeds, monetary equilibrium will always be maintained if only  $C_1$  and  $R_1$  are again brought into the required relation. If one does not take care to see that this condition is fulfilled one way or another but allows the original difference to persist, then there sets in a gradually accelerating depressive process. The exact opposite would be true if  $R_1$  tended to fall, for example, as a result of a technical improvement, or because of a change in the institutional arrangements of the kinds already suggested, or of others.

So much for the assumptions of the situation and the relevant causal relations. We now assume a monetary policy quite isolated from all other economic policies. This monetary policy, the objective of which is stable monetary equilibrium, has only the regulation of credit conditions at its disposal, while all other policy is kept free of monetary considerations. We think of the credit conditions in the form of a fixed standard combination, and disregard for the moment the problem dealt with in the last chapter with respect to the "ineffectiveness" of credit policy.

## MONETARY EQUILIBRIUM

The monetary policy is thus quite fully determined. The credit conditions have direct effect only upon  $C_1$ . Only by means of a divergence from monetary equilibrium—an eventuality ruled out by our assumption that the norm is maintained—would there be indirect effects upon  $R_1$  as well. From this it follows that, of the alternatives mentioned, only the first is open. The monetary policy must strive, by continuously changing the terms of credit, to adapt  $C_1$  to such a relation to  $R_1$ , that the general equilibrium condition,  $R_2 = W$ , will be continuously satisfied. According to our assumptions  $R_1$  is thus the variable independent of monetary policy; in other words, it is the factor which represents the changes to which the monetary policy must adapt itself by all the means in its power in order to fulfil the equilibrium conditions—which we have supposed to be the norm of that policy. The changes in the independent variable contain the results of all primary economic changes plus the results of all other economic policies besides monetary policy. Monetary policy would then be truly “determined,” but only because we have assumed a “standard combination” of credit conditions and because monetary policy is isolated from all other policies, whose actual form naturally must determine the real content of monetary policy.

### § 7. EFFECTS ON VARIOUS “PRICE LEVELS”

This equilibrium, however, will be attained with a constantly changing level of  $C_1$ . Since, further,  $C_1$ , according to the monetary policy assumed, can offer no resistance against  $R_1$  (unless that policy is given up), it is very probable that the majority of forces within the system of price formation which tend to increase  $R_1$ , will gather strength, while all those tending to reduce  $R_1$  will lose strength. The result of this will be that the

monetary policy can easily imply a continuous increase of  $R_1$ , necessarily accompanied by a corresponding increase of  $C_1$ , and of course, finally, a general upward price movement, although under a continuously maintained monetary equilibrium.<sup>7</sup>

This equilibrium movement—"inflation" if one wishes, and if one doesn't give this word a special meaning, such as, for example, to use it only for such price movements as appear in a cumulative Wicksellian process—can, however, be of political interest; the increasing capital values have, among other things, direct effects upon the distribution of wealth. The standard monetary policy must, therefore, in some way or other be supplemented or changed in order to satisfy other political interests than those of the capitalist entrepreneurs.

However, we have here assumed an isolation of monetary policy, which is allowed to control only credit conditions and nothing else. Under these assumptions, and the assumption of monetary equilibrium as the single objective of monetary policy, no other policy is possible. The Central Bank can certainly be forced to give up adapting the capital values to the costs of construction—for example, this may be the case if the currency is not free, but tied to a standard other than monetary equilibrium—but then monetary equilibrium is abandoned and the depressive phase of a credit cycle sets in. This, however, is contrary to our general assumption.

There are, indeed, also means of influencing  $R_1$  directly without making use of a general depression effected by tightening credit. But these means are not within the realm of an isolated monetary policy. Every other policy which can have an influence on  $R_1$  comes into consideration here.

If, therefore, the consequences of a continuous adjust-

<sup>7</sup> Cf. above, Ch. VI, Sections 9 ff.

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ment of  $C_1$  to  $R_1$  are not acceptable—for example, because of the effects on the distribution of incomes—but at the same time it is desired to maintain  $R_2 = W$ , which is the general supposition upon which we are arguing, then one of an endless number of combinations of credit policy and other economic policy must be chosen, which will fulfil these two conditions.

### § 8. THE CONFLICT BETWEEN BUSINESS STABILIZATION AND PRICE STABILIZATION

Perhaps one might even propose, instead of a monetary policy which continually adapted  $C_1$  to  $R_1$  ("isolated credit policy"), rather to fix  $C_1$  and adapt  $R_1$  to it. Such a solution might well be desired in many respects, for example, in so far as, by means of it, business risks would be reduced to a minimum.<sup>8</sup>

To hold  $C_1$  constant would not be hard in itself.  $C_1$  is, *ceteris paribus*, nothing else than a price reflection of the "rate of interest," that is, of the general credit conditions; each change of the *cetera* can in theory be compensated by a corresponding change of the credit conditions.

But how is one to adjust  $R_1$  to a constant  $C_1$ ? The credit conditions have their main direct effects only on  $C_1$ . The difficult part of the policy must then be laid directly on these other regulations, which we have tried to keep outside of monetary policy by an isolation premise.

With the type of public control of economic life which is found everywhere in the present phase of development of the capitalist epoch, this latter monetary policy, directed to reducing business risks, is not only indeterminate, because it permits of many solutions, but also any particular solution of it is very hard to carry

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<sup>8</sup> Cf. below, Section 13.

out. So long as a thorough integration of all economic policy has not been generally brought about, by which mutual obstruction between the different elements of that policy would be prevented, there actually is an institutional "isolation" of monetary policy and other economic policy. Directly, the Central Bank governs only the credit market.

In the main, then, the Central Bank must be content to regard  $R_1$  as a variable independent of its own policy. If it pursues the general objective of maintaining monetary equilibrium, it must, therefore, confine its activities to adjusting  $C_1$  to  $R_1$  with the help of credit control, as in our first case.

However, since  $R_1$ , as a result of many kinds of primary economic changes, is continually in motion, monetary policy cannot guarantee a constant level of  $C_1$  (or, in general, of "price levels"). The resulting consequences for the distribution of incomes and wealth and related matters have already been noted. If these consequences appear undesirable and the Central Bank wants to prevent them, it has, as a consequence of the given institutional isolation, no other choice but *to abandon monetary equilibrium as a standard of monetary policy*. It must attempt, during the credit cycles brought on by its own policy, to maintain the stability of  $C_1$ —or another "price level"—even when this requires deviations from the relation of  $C_1$  to  $R_1$  which gives  $R_2 = W$ . At the bottom of this lies the *theoretical conflict, under the existing political and institutional circumstances, between business stabilization and price stabilization*.

Irrespective of what price level is stabilized, and because of various changes in the price system (many of which are certainly of a cyclical nature, and connected among other things with the durability of real capital), and also because of various changes in economic regulations, price stabilization cannot be attained without

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disturbing monetary equilibrium. The more progressive and cumulative the tendency of the Wicksellian process, the more severe will be the changes in credit conditions and price ratios necessary to prevent general price movements. Thus, the business cycle is not eliminated by this policy.

### § 9. STABILIZATION OF STICKY PRICES

Price stabilization and the elimination of the business cycle are thus to some extent competing and contradictory objectives. The qualification must, however, at once be added, that this conflict is, of course, a matter of degree, depending on what kind of price level is stabilized. If one desires the greatest possible diminution of the business cycle, but at the same time wants a guarantee against too great, and especially uni-directional, price movements, which naturally affect distribution most severely, then one must try to stabilize an index of those prices which are sticky in themselves. This would often lead in practice to a stabilization of wages. For a more detailed argument I refer the reader to Chapter VI.

The stabilization of prices, already quite inflexible in themselves, is not so contrary to requirements for the maintenance of monetary equilibrium because of the broad and elastic margin which it allows for the movement of other prices. Stability of the level of the sticky prices permits a certain freedom for all other price levels, including capital values. From our point of view, it is especially important that the Central Bank can adjust  $C_1$  to the changes in  $R_1$  without disturbing the index of sticky prices, until the movement of  $R_1$  itself begins to interfere with this adjustment.

It is thus the "indeterminateness" of such a price stabilization as a norm for monetary policy in the short period which constitutes its advantage from the standpoint of business stabilization. And quite often it is only

the accumulated effects of uni-directional price movements on income distribution in the long period which one actually desires to prevent, and desires to prevent sufficiently to be ready to accept an occasional deviation from monetary equilibrium and the ensuing disturbances as part of the bargain.

From the same point of view it is evident that  $C_1$  is the last price level that one should try to stabilize in a capitalist society with an organization of monetary policy of the kind just described. Stabilizing capital values would plunge the economy continually into Wicksellian processes in one direction or the other as soon as  $R_1$  changed. The same is naturally true for all indexes of flexible commodity prices, not least for those which pass in lay circles for the "price level" pure and simple, usually a kind of wholesale price index.

#### § 10. THE INFLUENCE OF PRICE STABILIZATION ON ANTICIPATIONS

Here we have only taken account of the difficulties of price stabilization from the standpoint of business cycle policy. However, a monetary policy aimed at price stabilization has important advantages from that same standpoint. By means of such a policy those movements are moderated which depend upon the changes in the confidence of entrepreneurs in the future, a factor which plays a causal rôle and increases the amplitude of the oscillations, both in the actual business cycle and in the cumulative process of the Wicksellian theory. A publicly declared monetary policy can hardly serve its purpose if it is not stated in simple terms and in terms which are of direct importance in the anticipations of entrepreneurs. These requirements are met only by a monetary policy defined in terms of prices.

To construct a price index whose stabilization would

bring about a maximum reduction in the business cycle, one would of course have to weight the sticky prices with respect to their importance in the profitability and investment calculations of the entrepreneurs concerned. We would thus arrive at the same index which we discussed in more detail in Chapter VI and in which the prices of various goods, or of the same goods in various markets, are weighted with respect to their stickiness and according to their significance for real investment. In view of the exposition in Chapter VI, Section 5, it is clear, that in using the second of these two weighting principles, one should not only take account of the change in profitability, which given changes of prices imply for so and so many firms of such and such a size, but one should also have to multiply this figure by the coefficient of investment-reaction proper to these branches of industry. On the other hand, this index should not, in this connexion, be continually adjusted with respect to "internal" causes of change, as it is just the effects of these, among others, upon the whole price system which one wishes to avoid by deliberate deviations from the conditions of equilibrium. This latter fact must be welcomed, since the line of division between "internal" and "external" price change is not very clearly drawn in principle and is still more difficult to ascertain in practice.<sup>9</sup>

The rule, that such a price index should be stabilized in order to obtain the maximum mitigation of the business cycle without too great a general price movement in one direction, is thus the conclusion from our two premises of fact and value. I emphasize once again, that from the standpoint of the interests of various social groups, a standard of monetary policy so formulated is not determinate in its actual content. The content is

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<sup>9</sup> See above, Ch. VI, Section 11.

determined only when all the rest of the economic policy is determined.

A situation like the present (Spring 1932) is obviously not one of monetary equilibrium. A depressive Wicksellian process has been in progress for several years with the result that even inflexible prices are slowly falling with some lag. In order to commence such a monetary policy, one must, naturally, increase capital values and all other flexible prices to a level which restores monetary equilibrium at the existing level of sticky prices. Only by this means can the progressive fall of sticky prices, accompanied by continually deepening depression, be prevented.

#### § 11. THE NORM OF MAXIMUM EMPLOYMENT

I wish now to undertake a short examination of a few other norms for money policy of a more general character, which have been proposed in discussions of this subject. In putting them forward their sponsors have usually tried to co-ordinate them theoretically with one another and with the general norms already discussed.

I shall here pass over all attempts to represent the stabilization of the price level as a general norm of monetary policy. With reference to what I have said above, I would only emphasize that all serious attempts now made to argue for such a standard—which do not simply postulate in the very statement of their norm that a constant price level implies actual elimination of the cycle, or do not merely rewrite such an *a priori* assumption in pure verbalism—must nevertheless have overlooked two things. First, there are primary changes whose effects upon price relations are not “uniform” or which do not consist simply of changes in credit conditions; and second, there are institutional factors which bring about different degrees of stickiness for

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various prices or for the same price in various markets. It need hardly be added that the purely theoretical indeterminateness of the norm due to the indifference phenomena discussed above has also been very widely overlooked.

I also skip all kinds of vague proposals of policy whose greatest merit consists in the *argumentum ad hominem*, which they contain, since by the choice of words they form all sorts of sympathetic common-sense associations. To monetary theorists they are therefore rather a literary dressing-up of more precise statements. To these belong, for example, the demands that finance, or economic life, should be stabilized, that equilibrium should be attained in the economic mechanism, that inflation and deflation should be avoided, and all the rest of the pleas frequently heard.

One norm often proposed is that monetary policy should attempt to maintain the employment of the means of production at a maximum. It is usually phrased that unemployment should be kept at a minimum. I refer back to Chapter VI, Sections 8-13, where it is shown that a monetary policy with this aim as the only standard would either lead to certain general and cumulative price movements, which the advocates of such a policy would certainly not be ready to approve, or else require quite extensive public regulations of markets, which these protagonists would be even less anxious to champion.

These norms for monetary policy and similar, more general declarations are usually to be understood only as demands that results of the deviations from monetary equilibrium should not be allowed to become too great.

### § 12. TWO OTHER GENERAL NORMS

On the other hand, as a general requirement it is often proposed that monetary policy should set itself a

definite aim and then carry it out inexorably and that this chosen norm should be made public, so that all can base their expectations upon it to maximum advantage.

However, this requirement is purely formal from a normative standpoint. It is compatible with any monetary or business cycle policy whatever and in any direction. It derives its principal importance as *an instrument* of monetary policy. In so far as the policy decided on influences entrepreneurs' anticipations and thereby also the movements of prices and business generally, the publicity requirement facilitates the carrying out of the stated policy. As an instrument of policy, however, it would not render the determination of the content of the norm superfluous or irrelevant—as it would in a world of complete and accurate foresight—and the whole problem discussed in this chapter would remain to be solved.

Another proposal for monetary policy which is often encountered requires that the risk of changes of the "real content" of contracts should be minimized, that is, that the policy should cause the difference between the "actual" and the "intended" value of pecuniary rights to be as small as possible. This norm usually, if not always, serves as motive for the practical demand that the so-called price level should be held constant. In this it is assumed that credit contracts are entered into with the idea that prices will remain unchanged, and it is emphasized that all changes in the general price level disturb the distribution of wealth and incomes. These disturbances, it is said, are arbitrary and accidental, and cannot, therefore, be desired, even from the point of view of those persons who consider the existing distribution of wealth and income neither just nor otherwise defensible.

But this is by no means so very self-evident. Such a shift in the distribution of wealth may be combined, in

a given situation, with certain measures of price regulation and taxation for the benefit of a third party but against the interests of the party gaining in the redistribution. One can well imagine that such a shift certainly might not be an accident but rather the result of deliberate intent. Why it is not "rational," then, is hard to understand. However, it is probably much more important to emphasize that there are very many other considerations which are more important in deliberations on monetary and business cycle policy than these creditor-debtor relations. Broad groups of the population are generally neither creditors nor debtors, and their interests may in certain cases diverge considerably from this monetary norm, which actually takes account only of the propertied class.

However, we shall pass over this volitional aspect of the matter. In any case, it is obvious that this requirement is also largely formal. Its content depends upon what sort of ideas the capitalists, who make and receive the loans, form as to the aim and the success of monetary policy. If here, in the discussion about the choice of the norm, we neglect the latter, and quite simply postulate maximum success of monetary policy, the norm has still to be decided upon. If this decision, too, is taken for granted, then the contracts obviously always receive their "intended content" which corresponds to the determined norm, whatever this may actually involve. This "real content"—an idea which is usually connected with legal discussions over "natural rights" and related concepts—thus sheds very little light on how a rational long-period policy should be set up. And in the short period there are, as we have said, very many other, partly conflicting, interests.

At best one must interpret the requirement that the risk of changes in the "real content" of contracts be minimized as underlying the general and also rather

indefinite value premise that too large and uni-directional price movements should not be tolerated. If one combines this value premise with the premise that business cycle movements should be eliminated as far as possible, one comes to the conclusion, which I have tried to make precise above, that one should attempt to achieve *the most complete fulfilment possible of the equation  $R_2 = W$ , compatible with the least possible movement of a price index weighted with regard to the stickiness of various prices and their significance for profitability and real investment.*

### § 13. MINIMIZING THE RISKS OF BUSINESS

The requirement, brought up from time to time, that monetary policy shall be so directed as to reduce, so far as possible, the risks of business, that is, to keep the gains and losses of entrepreneurs as small as possible, relates to either of two things. First, it may relate to new investment, in which case the requirement may be interpreted as meaning that  $\Sigma (c_2 - r_2) = 0$ , which on the whole means, with certain qualifications, that monetary equilibrium should be maintained. The theoretical content and the consequences of such a policy have already been studied. Or, second, it may require entrepreneurs' gains and losses in general to be kept down. The requirement then implies that, broadly speaking,  $C_1$  be held constant, concerning which one should consult Sections 6-9. But, as I emphasized there,  $C_1$  is the price index which should be stabilized least of all if, short of a thorough socialist integration and centralization of all economic policy, one wishes to achieve the maximum business stability that is consistent with the demand for some stability in price relations. The reason for this is that an adaptation of  $R_1$  to  $C_1$  is a very difficult monetary policy to carry out, in so far as the

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available means of monetary policy—credit policy—have direct effect mainly on  $C_1$ , the quantity to be held constant, and not on  $R_1$ , the quantity to be adjusted. The effects of monetary policy upon  $R_1$  actually come about only by way of deviations from monetary equilibrium, which hinder the stabilization of business. Thus stabilization of business requires, in other words, that the entrepreneurs now and then suffer certain gains and losses over and above the minimum that could be aimed at if monetary policy without regard to business stability attempted to keep these gains and losses as small as possible.

That is to say, the maintenance of monetary equilibrium in the presence of changes in the primary factors determining prices is not the same as the economic development which is most free of risks for the capitalists. Monetary equilibrium involves a balancing of gains and losses only on actual current investment. This is something quite different from the balancing of gains and losses on existing real capital as well.

### § 14. DAVIDSON'S NORM: PRICE MOVEMENT INVERSE TO CHANGES IN PRODUCTIVITY

Finally, we shall mention one additional norm of monetary policy, formulated by Davidson and also appearing elsewhere in monetary literature, namely, that the price level of finished goods should move in inverse proportion to productivity. For reasons set forth in greater detail in Chapter VI, Section 6, this norm can, with certain qualifications, be regarded as an approximation to the following one: that a special index in which prices are weighted according to their stickiness and investment significance should be held constant. We have shown that this norm is not consistent with the cancellation of risks for capitalistic entrepreneurs.

Davidson based this monetary standard, requiring that the price level should vary inversely with productivity on an argument to which I have already alluded in Chapter VI, and also on certain general postulates of "justice" in distribution, and of the "value of money" in an absolute sense. As I cannot here enter upon the general epistemological discussion of the economic theory of value, which would be necessary for an examination of these arguments of Davidson, I must refer the reader to a theoretical criticism of the whole method of thinking which makes such arguments possible.<sup>1</sup> There is less reason to deal here with these arguments of Davidson, which are superfluous from my standpoint, since I have myself just proposed, with definite reservations and subject to certain premises both of fact and value, a monetary policy which implies some sort of price stabilization, and for which Davidson's norm represents a fair approximation because of certain factual relations and despite its incorrect motivation.

I have been reasoning here throughout upon the value premise, stated in Section 3, that business cycles should be mitigated. I shall leave the purely mechanistic attitude toward the business cycle without comment. Usually it emphasizes that prosperity is "necessary" in order to stimulate economic life, and that the crisis and depression are "necessary" for a liquidation of the investment errors which arise in prosperity. This mechanistic attitude has many nuances. On the whole it represents, in terms of business cycle and monetary theory, a rationalization of economic liberalism, which erects its own fatalistic, negative attitude toward planned economic control into a doctrine. This peculiar attitude has its psychological basis in the habit men have of

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<sup>1</sup> *Das Politische Element in der national ökonomischen Doktrinenbildung*, Berlin, 1932, and "Das Zweck-Mittel-Denken in der Nationalökonomie," *Zeitschrift für Nationalökonomie*, Vienna, Band IV, Heft 3, 1932.

thinking in terms of rhythms and cycles. We walk, they reflect, by first advancing one leg and then the other; after the flood comes the ebb, after the sunshine comes rain, after the day comes night; and in the same way good and bad times must naturally follow one another. Cassel once jestingly remarked that perhaps the whole attitude was ultimately based upon a primitive puritanism; happiness is somehow evil, something immoral, which should be accompanied by a purifying misery now and then in order that those who have experienced it may be redeemed; and so it is only proper, right and natural that after the upswing, with all its sad mistakes, bad times should follow.

## CHAPTER IX

### METHODS OF MONETARY ANALYSIS

#### § 1. THE BASIC HYPOTHESIS

At this point I should like to recall the guiding principle which has been followed in the foregoing investigation, namely, that it should develop logically out of an immanent criticism of Wicksell's monetary theory. I intended to clear up the meaning of monetary equilibrium, starting from the main hypothesis of his theory, which I took for granted. But I promised that I should examine at the end the general assumptions which underlie this hypothesis. It remains to fulfil this task.

The hypothesis on which I have based this study is the Wicksellian idea of a cumulative process, and more especially the idea of its causal connexion with a state of disequilibrium in the relation  $i = y_2$ . After examining this last relation from the standpoint of the main argument, I have attached to it a meaning different from, and somewhat more definite than that given to it by Wicksell. I then reached the result that this first equilibrium equation, even when so reformulated, could not stand for itself but had to be established by an inference from the more general second formula  $R_2 = W$ . The latter, however, would have only a very formal content, and would give no explanation of the causal mechanism, if not analysed in terms of the first formula. Even this second formula had to be amended in several respects. Wicksell's third equilibrium formula was found fundamentally false; in the commodity market monetary equilibrium was shown to have consequences quite different from those alleged to occur under a constant price level.

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On the analytical skeleton remaining as the result of this immanent criticism, I then tried to reconstruct the Wicksellian theoretical model and to accomplish that as far as possible within the restricted framework drawn up for this essay. Starting always from the hypothesis first mentioned, the investigation has followed the usual course, holding to the two fundamental requirements of theoretical precision and theoretical consistency. The result should be a theoretical model based upon Wicksell's hypothesis, but more explicit and no longer self-contradictory. There is no reason to hide the fact that the analysis has been more successful in discovering than in solving open problems. We are certainly as yet far from a formulation of the Wicksellian theory which would make it workable as an instrument to be applied to the organization of observations and the analysis of an actual development. As I have already stated, the value of this theory, in common with the value of all other theories, must in the last instance be dependent on the degree to which such a practical application will eventually be made possible.

When we now come to examine the basic hypothesis itself—or to be more precise, to make explicit the general assumptions implied in it—we must bear in mind that some aspects of these assumptions have already been discussed in the course of this study. To a considerable extent, therefore, I can content myself with referring to what has already been said.

### § 2. THE GENERAL ASSUMPTIONS CONTAINED IN THIS HYPOTHESIS

The most important assumption is, of course, the old familiar one of "rational behaviour." The idea is that there is a large number of private entrepreneurs who act rationally so as to maximize their profits. As soon as

the money rate of interest falls below the natural rate, they rush to take advantage of their opportunity for profit making. Thus the direction of production—and also, when there is unused capacity, its volume—undergoes a change as the result of a change in profitability.

The postulate of rational behaviour has on the whole been very badly handled in economic theory. The marginal utility school has set about propping it up with an explanation involving a complete popular psychology in terms of Pleasure-Pain mechanics. The explanation of economic behaviour was said to lie in the universal desire for pleasure or satisfaction, which was rationalized in those terms. And since men are not always quite rational in their behaviour, the hypothesis was said to have only approximate validity.

Apart altogether from the question whether such an “explanation” of the usual demand and supply curves is possible,<sup>1</sup> it is quite clear that this paraphrase of the marginal utility school for the “rationality of entrepreneurs” is completely superfluous. Nothing more perplexing is asserted than that an entrepreneur, who reckons his debits and credits in quantities of money—not utility or marginal utility—plans and acts so as to obtain the greatest possible surplus, also expressed in terms of money. Why not accept this directly as simply a statement about people’s behaviour under capitalist institutions? What concern is it of economic theory, and what does it matter, that there was, and still is, a liberal-metaphysical rationalization which calls this behaviour “rational” in a deeper sense, in order to lay the foundation for a social apologetics? Just how far does that provide the sort of explanation we require for scientific purposes? Why not start immediately on the same empirical basis as practical “business economics”?

As long as this assumption is not made too “deep,”

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<sup>1</sup> On this cf. *Das Politische Element*, Ch. IV.

therefore, it hardly endangers Wicksell's basic hypothesis. More dangerous is his assumption of "free competition" in the very special sense which has already been discussed. Above all, it is plainly unreal to suppose that in equilibrium  $y_2$  has the same magnitude over the whole economic system. Moreover, different parts of the system react in different ways to a given margin between  $y_2$  and  $i$ . We have been able to dispense with both of these assumptions, however: First, by replacing  $y_2$  and  $i$  in the equilibrium formula by the magnitudes  $c_1$  and  $r_1$ ; and, second, by introducing the coefficient of investment-reaction, which is to be thought of as an observable and theoretically measurable ratio between the volume of investment and the corresponding profit margin. Thus monopolistic elements can readily be incorporated in the Wicksellian theory. The introduction of the purely behaviourist concept of investment-reaction, further, rids us of the necessity of using a hedonistic hypothesis in explanation of "rational behaviour."

A great obstacle to practical analysis based on Wicksell's theory is generally presented by the difference between "short-run" and "long-run" effects. This difficulty may be overcome in theory by specifying the coefficient of investment-reaction with respect to the period of time under consideration. Similarly the decomposition of the Wicksellian  $i$  into all its component parts raises no difficulties in principle and does not call Wicksell's initial hypothesis in question; especially if the relation  $y_2$  to  $i$  has been replaced by  $c_2:r_2$  or  $c_1:r_1$ . The consequence is simply that we have to work with combinations of credit conditions. It is also possible to overcome in theory the difficulty raised by the fact that not only monetary policy but also all other economic policy reacts on the equilibrium position, since it is clear that every change in the data changes the values of  $i$  that will preserve equilibrium and also the nature of the

economic situation that will prevail in equilibrium. The interesting question of the indifference field does not in itself lead to any fundamental weakness in the theory. For the very concept of indifference indicates that it is just in terms of this theory that the problem is posed. Wicksell himself often came near to formulating the alluring problem of the indifference field in general price theory, although he did not make use of this line of thought in monetary theory.

In the present essay we have hardly touched on the problem raised by international complications. Wicksell's theory is valid primarily for a closed economy, and it is applicable directly in a general analysis in terms of a world economy only if the phases of the business cycle synchronize fairly well in all parts of the world. To some extent this was perhaps in fact the case prior to the Great War. In a more intensive analysis, however, international differences must be taken into account and more so in the present phase of development than before the War. But there is no difficulty in principle in providing for such differentiation within Wicksell's theoretical framework. All we have to do is to modify  $W$  in the capital market equation so as to take into account international capital movements: And also, of course, to analyse the international relationships of  $i$ ,  $e$ , and everything else.

It is just because Wicksell's formulation of monetary theory does not contain elements excluding from it the possibility of amendment and adaptation on every point, in correspondence with the facts to be observed, that it is scientifically so fruitful. It is obviously a very formal theory and is thus not based—as, to use only one example, the classical cost of production theory was based—on very rough approximations which are conceptually indispensable, cannot be dropped, and consequently block the way to a progressively more realistic analysis.

## § 3. THE TWO FRONTS OF ECONOMIC THEORY

If we disregard the problem of the theoretical relation between facts and values, which Wicksell, as a typical utilitarian, had to leave in systematic obscurity, he had, in addition to his scientific originality, a very clear and well-thought-out theory of knowledge. Moreover, the two sides of the scholar worked ideally together. For it was his insight into the theory of knowledge which kept the field free, in spite of his metaphysical foggiess, for his intuitions of genius. He always characterized his monetary theory as a hypothesis. Such an abstract construction can never be anything else. But what sense is there, then, may we finally ask, in making such a consciously hypothetical and very abstract, formal construction and enlarging it in such detail?

Properly speaking, it should be described as a theoretically related system of questions addressed to the observable data. It is merely a kind of organization of observations, expressing the element of comprehension in knowledge. Observations in the raw do not yield knowledge. Without a carefully thought out theory to organize observations, knowledge necessarily becomes crudely false since it is then generally worked into an uncontrolled and much too simple theory. Abstract theory, therefore, must always be *a priori*, in comparison with ascertained "facts" and "laws." Generally facts and laws only exist for science within hypothetical theory. Whether they have, in addition, another kind of existence it is fortunately not the task of any special science to decide. The chief terms of theoretical investigation are therefore "problem" and "hypothesis," not "fact" and "law." In theory, every affirmative proposition has its conditional clause, even if it takes the form of a logical abbreviation. Thus *the ideal of abstract*

*theory is a complete logical circle.* It follows that theory in itself can contain no material knowledge of reality.

This *a priori* procedure, which it is impossible to dispense with, is at present particularly in need of being emphasized in the social sciences. The first requirement for receiving sensible answers is to have raised sensible questions. At the same time it must be stressed just as explicitly that this method of procedure is not simply a defence of the old common-sense, deductive, absolutist theory which did not aim, in principle, at giving a set of related questions, but at establishing "laws." Both fronts of scientific theory—against naïve empiricism and against theoretical absolutism—must be firmly held.

#### § 4. THE FRONT AGAINST NAÏVE EMPIRICISM

To begin with the first position: It is regrettable that the thoroughly justifiable reaction of the institutionalists in America against the absolutist theorizing of the sterile post-Clarkian period has sometimes avowedly claimed the impossible—to make observations and give answers without putting a clear and interrelated set of questions. Of course the institutionalists do put questions and, of course, they have an abstract *a priori* theory. Often, indeed, they even ask very intelligent questions. But it must be emphasized that theory, which is necessarily implied in the very formulation of the questions, has no greater claim to acceptance because it is expressed only implicitly in the results. Thus the implied theory steals past the first control station—the unshakeable logical demand for freedom from internal contradictions.

A critical attitude toward the old classical school with its deductive or "intuitive" statement of general laws, must lead to an all the more rigorous observance of the requirements of completeness, clarity, and correlation in regard to the system of hypotheses—i.e., of questions—

contained in abstract theory. The present essay in immanent criticism is a modest attempt in that direction for a restricted field of that theory.

But although, from this point of view, abstract theory is *a priori* in method, it has, nevertheless, at the same time an empirical connecting link. Herein lies the whole difficulty. In the last resort, experiment and observation are still sovereign. The "assumptions" of theory are constantly submitted to the test of whether they can be reconciled, without contradiction, with all our conceptions of reality. Theory can, of course, never be "verified" (in the strict sense) by observations, just as questions cannot be "verified" by answers; observations merely fill the space given by theory. But observations nevertheless are a check upon the "empty boxes" of theory. That is, these boxes must have the capacity to contain the observations. The total complex of theoretical questions and observational answers must form a systematic and non-contradictory whole. If not, the questions have to be altered, for the observations, if correct, can only be changed by giving them a new "meaning."

Theoretical criticism, therefore, advances along two routes: Correlation within and around the theoretical construction. And the more abstract theory is differentiated, the more complications are introduced, and the further observations are carried, the more empirically determined in this way become the hypotheses as well, and the more the questions are framed so as to contain elements of their own answers.

## § 5. THE FRONT AGAINST CLASSICAL SCHOLASTICISM

The dilemma of naïve empiricism is obvious. As a rule its methodological programme is to be taken not seriously but more as an overstatement of the protest against the

common-sense, deductive, economic theory of the old classical school, which really attempted to distil general laws out of mere thought, not merely to formulate a set of interrelated questions. The following lines are an attempt to make clear the other methodological front which we have in mind—a front directed not against modern institutionalism but against classical decadence.

There is a school of methodology—to which the author of this work does not belong—which makes claims for abstract theory so very ambitious that it cannot content itself to formulate questions as clearly and completely as possible, and to confront them with empirical facts. It is a curious fact that this school sometimes creates an illusion of “realism,” rationalized in the old sensible idea that, just as we need two legs for walking, we need to use both “deduction” and “induction” in science. But very often the “induction” does not get beyond “practical examples to illustrate the argument,” and so one is left, often unconsciously, in the theoretical absolutism which *states* general laws “deductively” and afterwards *illustrates* them with selected examples. Thus it is in these examples that all the elements of realism consist. The evidence is systematically selective.

Practical examples may be useful for popular exposition to a circle of readers who are not scientifically trained, and to whom one wishes to bring home by psychological association or even by suggestion certain lines of argument which they would not otherwise grasp. But at present I am discussing only methods of scientific inquiry where, on these grounds at least, no justification can be offered for such examples. Psychological association in scientific work is rather a sign of digression, of verbalism.

A really empirical verification of abstract theory has an altogether different appearance. In it, the range of the conclusions is given logical limits by the explicit

premises of the inquiry, and every attempt is made to make the observed facts as comprehensive as possible. Practical examples, regarded as scientific empiricism, are simply unworthy travesties.

In abstract analysis they are of no more use, since, precisely, because of their apparent realism, they hinder instead of promote a full and adequate statement of the premises. They thus make it possible for the theoretical propositions to escape recognition in their hypothetical character, and these propositions are given the appearance of containing knowledge of reality—which is in itself impossible.

When, therefore, in the preceding pages I tried to make clear my line of argument by an example, I intentionally made it highly abstract. The method of investigation by practical examples and historical parallels seems to me to belong to an epoch in our science that should be long past: It is a method just as unsatisfactory as pure empiricism, for it is a hindrance to theoretical clarity. A theoretically planned empirical analysis of an actual situation is something quite different. It is characteristic of Wicksell's clarity in the theory of knowledge that he always scorned this cheap method of "realism."

## § 6. THE COMMON-SENSE ELEMENT IN RESEARCH

There is, however, an explanation, although not a justification, of this "method of practical examples." It lies in the heuristic point of view. Practical examples, from the purely psychological point of view, play in research the rôle of an agent of common sense which social science requires, although it has first to be purified.

Thus we are in theory compelled constantly to choose assumptions in fields in which there are no factual data which are satisfactorily organized and checked, or in

which data are perhaps unobtainable with the existing technique of observation, e.g., on the plans and calculations of entrepreneurs about the future. Here a common-sense element enters: The theoretical structure is based on a very mixed, general, inductive knowledge of society. This kind of common sense, in fact, dominates a great part of the whole process by which we frame hypotheses. The originality of a great scientist like Wicksell consists in the accurate common sense that leads him through what at times is sheer confusion of thought to the formulation of fundamental questions which prove to be of interest to science.

But it is just this common-sense element in economic theory that makes a strict and critical analysis of the theoretical structure in terms of a clear methodology so absolutely essential. For in most cases this common sense is rooted in many unconsciously volitional elements which should at least be stated explicitly if theoretical clarity is not to be sacrificed. Moreover, common sense is intrinsically absolutist in tendency, i.e., it is unscientific. Common sense does not deal in questions stated hypothetically but in direct answers.

This common-sense element, therefore, has its root, its explanation, and to some extent its justification in an actual lack of possibilities of completely scientific empirical studies in certain fields. These are often connecting links in the theoretical argument. Hence it is self-evident that the only way in which the argument can be examined is by purely abstract theory. The main task of the critical school of economists in the field of abstract theory is thus to bring all the common-sense knowledge contained in abstract theory constantly and relentlessly into the daylight. When made explicit, this common-sense knowledge may, in a given case, become a hypothesis. The common-sense element cannot be altogether excluded, for then our first questions would lose all touch

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with reality and become quite arbitrary. But it can be drawn into the open, and purified of all metaphysics, popular superficiality, and the false conclusions which get included. In this way, moreover, scientific intuition, which tends to be dominated by common sense, itself becomes more fruitful. And further, it becomes clear, where and how, in different fields of investigation, empirical study can replace common sense.

With the help of the questions so formulated and purified, observations must be organized in the field of empirical study. Of course, the empirical work of investigation is the most important thing. Anyone who, like the author of this work, sees the ideal of abstract theory in a self-consistent, closed, logical circle—always provided the circular constructions are applicable, as far as possible, in empirical work—cannot seriously hope to achieve real knowledge through abstract reasoning alone.

